# Teacher's Guide

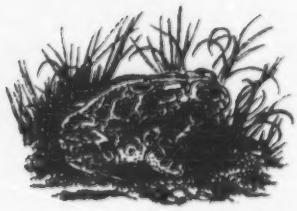
for the

## Alberta

## A·m·p·h·i·b·i·a·n

## Monitoring Program

Grades 5 and 6



Alberta Conservation Association

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ENVIRONMENT

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***Introduction***

This package is designed for elementary teachers wishing to have their students actively involved in the *Alberta Amphibian Monitoring Program*. This package provides the information necessary to make the experience of top-notch education value. Students will take on the role of junior biologists where they collect meaningful information and contribute it to an actual monitoring program.

It is hoped that teachers participating in the Amphibian Monitoring Program will continue their support annually with different classes at the same site(s). This will allow subsequent classes to compare the data from year to year to see trends and changes in the amphibian populations at the same site. To some extent, this is what biologists do with the data as well.

***Background Information about Amphibian Monitoring***

Amphibians are an important component of wetland ecosystems. They are an environmentally sensitive group of species and declines in their populations may be early indicators of problems in the ecosystem, particularly wetlands. Concern has been expressed around the world about the declining amphibian populations. Not only have their populations declined in areas affected by human activities but also in pristine areas where there is little or no human activities.

The International Union for the Conservation of Nature addressed the issue of declining populations by establishing the Declining Amphibian Populations Task Force (DAPTF). A Canadian working group has been established to monitor amphibian populations across the country. Alberta is also part of the North American Amphibian Monitoring Program (NAAMP), which monitors populations in North America.

The Alberta Amphibian Monitoring program is made possible by support from Alberta Conservation Association, Alberta Environment - Fisheries and Wildlife Management Division, Alberta Sport, Recreation, Parks and Wildlife Foundation, and Canada Trust Environment Fund.

***How to Use This Guide***

This guide is written for teachers of grades five and six. Alberta students are valuable volunteers participating in the *Alberta Amphibian Monitoring Program*. The knowledge and skills they learn through their participation will act as the foundation blocks for further studies about amphibians and wetlands.

The activities contained in this guide are designed to support specific subjects and topics within the curriculum frameworks. They are also intended to help the teacher prepare students for a favourable outing and be successful volunteers in the *Alberta Amphibian Monitoring Program*.

***Supporting Resources Accompanying This Guide***

Volunteers from the general public in the *Alberta Amphibian Monitoring Program* are given the resources listed below. These resources are also given to teachers who participate in the program with their students.

- **Manual:** *Alberta Amphibian Monitoring Manual* - A comprehensive manual with information of the 10 species of amphibians, coloured plates, species information, their distribution throughout the province, the monitoring protocol, and data sheets.
- **Audio Cassette:** *Amphibians and Reptiles of Alberta* - An audio cassette supplied to help you learn the amphibians' vocalizations.
- **Posters:**
  1. *Amphibians of Alberta* - A poster with photographs of Alberta's 10 amphibians designed to help you learn them by sight.
  2. *Keep Alberta Purple Loosestrife Free*! - A coloured poster with four photographs: a Purple Loosestrife plant, a Purple Loosestrife patch, a person on a Purple Pull (loosestrife has to be pulled out and destroyed) and an alternative plant for Purple Loosestrife in the garden.

***Curriculum Support***

The activities in this package support elementary curricula in the following subject, topic, unit and skill areas:

**Grade Five**

***Science***

- **Weather Watch** Students will measure temperature, wind speed and direction.

- **Wetland Ecosystems** Students will learn about organisms that live in and around wetlands; in-depth study of a local pond, slough, marsh, fen or bog; and students will study the role of human activities on wetland habitats.

***Mathematics***

- **Data Management** Students will collect, display and interpret data from a variety of sources; create categories for data collection; collect first-hand information and use tallies to report data; and construct a bar graph.
- **Operations and Properties** Students will develop and demonstrate an understanding of addition, subtraction, multiplication and division of whole numbers.

***Social Studies***

Students examine how Canada is linked to the United Kingdom, France and the United States and focus on an in-depth examination of several links that exist today; analyze how Canada's interaction with another country influences our lives; contribute various functions of group work.

**Grade Six**

*Science*

- **Trees and Forest** Human use of forests and the broad range of environmental issues. Students will develop an awareness of the need for responsible use.

*Mathematics*

- **Data Management** Students will create categories for data collection; collect first-hand information; extract data from self-researched sources; describe data using circle, line and single bar graphs; and demonstrate an understanding of averages.

*Social Studies*

- **Local Government** Students understand how people organize needs not met by government; understand the role of lobby groups and how they can influence the decisions of government; and participate effectively in groups.

## *Objectives*

The objectives of this education kit are:

1. To complement the *Alberta Amphibian Monitoring Program* by educating younger volunteers, grades 5 and 6,
2. Familiarize students, by sight and sound, with common amphibians found in their area,
3. Raise awareness of the factors affecting amphibians globally, and
4. Raise awareness of the importance of wetlands to wildlife.

## *Most Frog-rently Asked Questions*

**Q. 1. Why are we are participating in a monitoring program? What good is it?**

A. The data you collect is of vital importance to help biologists better understand the numbers, trends and distribution of the populations (presence and absence) of amphibians in Alberta. There is a need for information on a long-term basis.

**Q. 2. Can I still help even if I do not know much about amphibians?**

A. Of course! The resources entitled, *Alberta Amphibian Monitoring Manual* and the audio cassette, *Amphibians and Reptiles of Alberta* are supplied to help you learn the amphibians in your area. You can greatly increase your success by perusing the distribution maps for each species in the manual and making a list of the amphibians you are likely to see and/or hear in your area. Try to memorize the characteristics of their calls and their physical features so you are confident about identifying species by their calls. Yes, it's that easy.

**Q. 3. Should I go to the same site every year?**

A. Yes, it is preferred. Various sites throughout the province will provide information on long-term monitoring of Alberta amphibians. The more volunteers monitoring the same sites on an annual basis, the better. You are free to monitor more than one wetland site but keep in mind that they should be monitored on an annual basis. Amphibian population numbers can dramatically fluctuate from year to year as a result of natural conditions such as drought. This makes long term annual monitoring essential to distinguish between natural and other fluctuations in amphibian populations and distribution.

Any wetland site you wish to report on is welcome. The site does not necessarily need to be wet year round; some of the best breeding sites are temporary ponds. Remember, however, to respect the rights of private landowners and managers of public lands. Always get permission to monitor the chosen site(s) and tell the land owner or manager why you need to visit the site. Be sure they know when you will be conducting the survey.

**Q. 4. When is the best time to go and collect data?**

A. First, determine the species of amphibians likely to be seen and heard in your area. Then look at the life stage tables for each species to determine the best time of year to monitor. Time your survey according to the species' breeding season. If you are monitoring a site repeatedly throughout a season, you can begin as early as late March if the air temperature is around 7° C and if there is not a lot of ice. (Boreal Chorus Frogs and Wood Frogs are often heard and observed when ice is still on water bodies.) Allow two weeks between survey periods.

As you read through the *Alberta Amphibian Monitoring Manual*, you will notice that the protocol calls for listening to frog and toad calls at night. If you can and have the opportunity to take your class on a camp outing, during the night is the best time to listen for calling amphibians. Mornings are also another good time to monitor amphibians. The best time is on a ***Perfect Amphibian Observation Day***, page 43.

**Q. 5. How serious should I be about my involvement?**

A. The *Alberta Amphibian Monitoring Program* relies on volunteers to collect information which is part of a provincial picture examined by real-life biologists. Some volunteers view their involvement in this program as a privilege and some are proud to be part of a program that makes them feel like they are actually contributing to a program where their data is used. Many get some first-hand experiences with stewardship, thereby increasing their environmental awareness and becoming more aware of what's going on in the world. Monitoring a site can provide students with first hand knowledge of life's interconnectedness.

The data you provide from your site is a critical part of a worldwide effort to save amphibians. All the data are used to assess the health and status of amphibian populations throughout North America and are used as part of the global effort to study and conserve amphibians planet-wide.

**Q. 6. Can we take tadpoles back to the classroom?**

A. If you truly want to study frogs, do as real naturalists and biologists do. Go where the frogs are, follow them with your eyes, record your observations in a notebook, and take pictures or draw them. Frogs do not do well if they are handled a lot. Their delicate skin picks up harmful substances from your hands. As well, you are a giant to a frog and the excitement of being played with may leave them paralyzed with fear and unable to eat. In the end, go home and leave them in peace. Discuss the scenario entitled, ***Frog Dilemma:*** *To Keep or Not to keep (that is the question)* with the class. See page 9.

**Q. 7. Is there a real person I can contact if I have questions or concerns?**

A. If you would like more information and/or would like to participate in the amphibian monitoring program, contact the provincial coordinator, Lisa Takats with Alberta Conservation Association at Fisheries & Wildlife Management Division, 7th Floor, O. S. Longman Building, 6909 - 116 Street, Edmonton, Alberta T6H 4P2, or phone (780) 422-9536. You may also contact the Alberta Environment's Education Branch by phoning (780) 427-6310, or writing 11th floor, South Petroleum Plaza, 9915-108 Street, Edmonton, Alberta T5K 2G8. You are able to telephone toll free by dialing 310-000 first and asking for one of the above numbers.

## ***Frog Dilemma:*** *To Keep or Not to Keep (that is the question)*

Break your class into small groups and have them discuss the following scenario.

***Frog Dilemma:*** *To Keep or Not to Keep (that is the question)*

A class went on a field trip to Elk Island National Park to learn about aquatic invertebrates. While there, they collected bugs with dip nets and examined them in shallow trays of water. All creatures were returned to the lake before they left on the bus. One group of students found some frog spawn and put some in a glass bottle and took it back to the classroom for future study. The teacher didn't know about this until they returned back to the school.

Make up a short skit to show what might happen back in your classroom.

***Points for Discussion and Consideration***

- Should students be allowed to remove tadpoles from a pond and take them as pets?
- Students should have asked teacher permission to take spawn back to classroom.
- Students should know park rules. For example, all living and nonliving things are protected in parks and cannot be removed. This applies to all provincial and national parks.
- Students could have asked park staff if they could remove frog spawn and take it home. Park staff would then have informed students that it was not an option or choice for them to make.
- The same courtesy regarding spawn removal applies whether it is public or private land. Ask yourself, "Is everything for the taking no matter who owns the land?"
- If the frog spawn is kept, where will the tadpoles or froglets be released to? They <u>should not</u> be released to another water body because of an increased risk of spreading disease. They <u>should</u> be released back to the waterbody at the same location. Who will be responsible for that? Is that another field trip for the class? Will everyone have to chip in and pay for the bus transportation?

(continued next page)

- What will the students really learn when the frog spawn is back in the classroom? Important concepts such as: spawn need attention every day and consistent care; the proper equipment is required such as a well-aired, glass-sided aquarium; knowledge of proper conditions for frog spawn to develop successfully (What is an adequate temperature for tadpole development?); regular tap water is not suitable for tadpoles because of the chemicals used to purify it; and so on. Are students prepared to take full responsibility for the spawn and tadpoles?
- When keeping amphibians you must be certain that you can meet their basic life needs (food supply, temperature, light, humidity.) It is a good idea to have these conditions established before the animals arrive to their new home.
- How long do you plan on keeping them? If you choose to keep frogs, plan to deal with them as you would pet fish; they do not do well if handled a lot. Remember that living quarters and food supply have to change as the frogs develop. Does the teacher or students have a long-term commitment for them?
- There are a large variety of captive-bred amphibians to choose from in local pet stores. Captive-bred amphibians do not cause any depletion of wild populations and are relatively inexpensive.
- Native species should remain in the wild. Some species are vulnerable or in serious trouble of declining to nonviable levels and some simply do not make good captive pets.
- How would amphibian populations be affected if every school in Alberta (approximately 2 000) removed eggs, tadpoles and/or adults from their natural environment?

**Great Odds**

**A female northern leopard frog lays about 3 000 eggs but only one or two survive long enough to become breeding adults. In addition, adults only become reproductively mature after two to three years of age.**

***Read and Discuss***

This is a good time for the class to read the book entitled, ***The Salamander Room*** by Anne Mazer. This story reminds us of the interconnectedness of species and the importance of leaving wild animals in their natural habitat. See page 64, *Supporting Resources*, for more information.

## Student Preparation

Students must be prepared before they begin volunteering in the program. This will ensure a more meaningful and successful learning experience. The activities in this package can help you prepare students before you arrive at the wetland site.

Students should know:

- how to complete the *Alberta Amphibian Monitoring Program Datasheets, # 1 and #2*, and *Survey Data Working Copy* pages 48 to 50.
- the calls of frogs and toads in your area
- the salamanders that may be found in your area
- how to behave properly on a field trip
- how to treat amphibians properly

*Note:* If students wear rubber boots, they are more likely to go into the water after frogs. If they don't wear rubber boots, be prepared for wet feet and for shoes to get stuck and lost deep in the mud. If you prepare the students to listen for calls and catch with nets, their behavioural activity will be calmer, more manageable, and the frogs will be happier.

## What to Bring

- *Alberta Amphibian Monitoring Program Student Pocket Manual* (one per student)
- *Student Data Sheets* **#1 Amphibians** and **#2 Habitat Description**, pages 48 and 49, and **Survey Data Working Copy**, page 50, for each group
- map of your route
- watch
- Celsius thermometer, at least one for class (one per group, optional)
- Compass (to determine North, optional)
- pencils/pens, erasers, small pencil sharpener
- clipboard (one per group)
- dip net (one per group)
- ice cream bucket with lid perforated with air holes (one per group)
- tape recorder and batteries (optional)
- tape of frog calls (optional)
- proper clothing (wear hats on sunny, hot days, rain coats on rainy days)
- rubber or latex gloves (optional – they will act as a barrier and decrease chances of repellents absorbing through amphibian's skin)
- Plan a collection of other activities to do at the site. Review *Wetlands: Webbed Feet Not Required* poster kit for activity ideas. Refer to *Supporting Resources*, page 64.

## Do Not Bring

- It is strongly suggested that students do not take along sunscreen, lotions or insect repellents, as they can cause harm to the amphibians.

## How to Listen

1. Be familiar with the different frog and toad calls by listening to the audio-tape provided.
2. Wait quietly for about one minute until the disturbance of your arrival subsides.
3. Cup your ears with your hands to help you increase the range that you can hear frogs and toads.
4. Listen for three minutes to the calling frogs and toads.
5. Turn slowly in a circle as you listen.
6. Include all you can hear in every direction as far in the distance as possible.
7. Practice at home by standing outside your backdoor every night away from extraneous noise that may interfere with your ability to hear calling amphibians.
8. Practice listening frequently in the classroom so it is not a new skill learned at the wetland site where it is most critical to do well.

## At the Water's Edge

1. *Never follow a frog into the water.* Frogs will head for the deepest place and you have no way of knowing just how deep the water may be.
2. *Be sure you have no insect repellent or lotion on your hands when you handle amphibians.* The chemicals used in insect repellent and/or lotions can damage the animal's skin. Wash your hands before you go amphibian hunting. Have students rinse their hands at the site with a little pond water and have moist hands when handling the amphibians.
3. Use a *small net* to catch a frog.
4. If you are going to carry the frog a short distance, wrap a wet cloth around it. An ice cream bucket with holes in the lid will do for longer distances. Keep water or wet paper towels on the bottom so the *amphibian's skin can be kept cool and moist.*
5. *Return all amphibians to the place where they were caught and release them as soon as possible after capture.* This will give the animals a good chance to survive the adventure of meeting you.

***Warning:*** It is easy to catch a toad. You have probably been told that if you catch a toad you will get warts or be poisoned. A toad's warts are not catching, but toads and frogs do have poison in their skin that is harmful and will cause irritation if you should get it in your mouth or rub it in your eyes. After handling a toad or a frog, keep your hands away from your mouth and eyes until you have washed them thoroughly. The poison will not hurt your hands, but it sure tastes awful and can sting your eyes.

# Activities

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## *Meeting Amphibians*

Life cycle information is contained in the ***Alberta Amphibian Monitoring Manual***. Refer to page 3, *Biology of Amphibians*. Also in the manual are Alberta's 10 amphibians with information about their description, natural history, breeding, larvae, distribution and monitoring.

All salamanders and newts produce larvae that breathe using feathery external gills. Many are truly amphibious: the adults return to water to breed and the larvae live and feed in the water until they develop lungs and are ready to live on land. Some spend their whole lives on land. The larvae of these species develop inside the egg until they can breathe air.

Most frogs return to water to mate and lay their eggs. The tadpoles develop in the water. They crawl out on to land when their lungs are fully formed and their mouths are ready to start eating insects. Male frogs and toads call to attract females by inflating their vocal sacs.

**Some frogs have vocal sacs in their chins, while others have them in their cheeks. Toads have vocal sacs in their chins.**

This is the noise we hear at a water body, day and night. The males stay at the pond until no more females come to answer their calls. Then they leave the water and go back to the land looking for their next meal.

**The skin of a frog and toad is like a great gill (an organ for breathing underwater) stretched over its whole body.**

Every few weeks during the growing time, a frog gets too big for its skin, and it molts or sheds its old skin. Full-grown frogs also molt but not as often, perhaps only four times a year. Few people have seen a frog molting. It happens very fast, taking no more than five minutes. Frogs that molt on land eat the old skin. The skin of frogs that molt in water often splits off piece by piece and floats away.

## Introductory Activity – A Quiz for Inquisitive Minds

*Summary*
Students are introduced to the general topic of wetlands, land use and amphibians in a quizzical format.

*Materials Required*
- *A Quiz for Inquisitive* Minds, pages 16 and 17, one copy per student

*Procedure*
Have each student work alone to complete the nine questions. Refer to **Answers for Activity Sheets**, page 56, for answers and points for discussion after students share their answers.

***Further Activities***
- Brainstorm with students and make a list of wildlife species that inhabit wetlands. Remind students that wildlife includes both plants and animals. Divide the list into which species use a wetland seasonally and year-round. For example, a Canada Goose nests there so its use of a wetland is seasonal (they migrate in the fall) while some frogs use it year round (some hibernate on the bottom during the winter; Wood Frogs and Chorus Frogs do not.)
- Hang the poster, *Wetlands: Webbed Feet Not Required*. Refer to **Supporting Resources**, page 66, to find out how to get a free copy. Ask students to make a list of all the various types of land uses seen on the poster. Try some of the activities on the back of the poster.
- Make posters. Divide the class into different working groups and assign each group a different topic about wetlands. Some suggestions: the differences between cattails and bulrushes, the different types of wetlands (swamp, bog, fen, marsh, pond, lake, pothole, and slough), Purple Loosestrife, invertebrates (insects) you may see at a wetland, Alberta peat, wild rice in Alberta, the life cycle of a frog, toad and salamander, amphibian predators, and an amphibian's diet.
- Learn some bird sounds that you may hear in a wetland. Some common ones are red-winged blackbird, mallard duck, great blue heron, coot, white-throated sparrow, and Canada goose.
- Brainstorm to develop a list about the benefits of wetlands.
- Write a fable or story about wetlands and/or a wetland species. Some suggestions: how the wetlands came to be; why the frog jumps and the toad hops; the dragonfly that talked too much.

## A Quiz for Inquisitive Minds

Name _____

1. Amphibians are sensitive to the environment around them, ie. air and water temperatures, wind, humidity and barometric pressure. True or False.
   A. If True, write O in square number 7
   B. If False, write O in square number 4.

2. A marsh is:
   A. A wetland ecosystem characterized by layers of peat, acidic conditions and sphagnum moss. Write I in square number 2.
   B. Sometimes called a *slough*. The water can be a few centimeters to over a meter deep. It is a nutrient-rich wetland, characterized by cattails and reed grass. Write E in square number 3.

3. One third of North America's threatened wildlife are found in wetlands. True or False.
   A. If True, write P in square number 1.
   B. If False, write G in square number1.

4. Wetlands act like giant . . .
   A. *sponges*, write O in number 5.
   B. *pollution pits*, write A in number 5.
   C. *rice fields*, write E in number 5.

5. What plant became introduced to wetlands from backyard gardens and is now a significant threat to wetlands because they quickly spread and take over the habitat of naturally occurring plants?
   A. Poison Ivy, write I in number 9.
   B. Purple Loosestrife, write Y in number 9.
   C. Western Blue Flag, write E in number 9.

6. What's the difference between a bulrush and a cattail?
   A. No difference, they are the same plant. Write L in square number 8.
   B. A bulrush has a triangular stem and small clusters of brown flowers. A cattail has long brown flower spikes that feel like felt. Write N in square number 4.
   C. A bulrush is a raging bull and a cattail is a brown cat's tail. Write N in number 2.

7. Why do amphibians call?
   A. They call because they are claiming their territory. Write S in number 6.
   B. They call because they are communicating to each other. Only males are calling to attract females for breeding. Salamanders do not call. Write L in number 6.
   C. They are learning to sing. Write Z in number 6.

8. Not all amphibians are in trouble. Some species of salamanders and frogs are actually increasing rather than decreasing. There are probably a whole variety of different things contributing to the problems, some are worse than others. What are some of the causes?
   A. Reduction of ozone layer (thus increasing UV) and loss of habitat. Write S in number 2.
   B. Acid rain and pollution. Write O in square number 2.
   C. Predators wipe out a tadpole population and both A and B above. Write H in square number 2.

9. Most wetlands are drained so the land can be used for . . .
   A. *Agriculture, urban development and road construction,* write G in square number 8.
   B. *habitat for other animals,* write S in square number 8.
   C. *mining peat moss,* write A in square number 8.

My class will be monitoring amphibian calls at a wetland site. We are involved in a specific type of study. It is called a _ _ _ _ _ _ _ _ _ study.

1 2 3 4 5 6 7 8 9

# Three Activities to Help Identify Alberta's Amphibians

## Activity One - Make a Poster

*Summary*

Make a poster to help students identify the 10 amphibian species in Alberta and where they are distributed throughout the province.

Use the coloured photocopied pages from the blue coil-bound *Alberta Amphibian Monitoring Manual*. Tear out the colour plates on pages 6 to 10. The pages contain the ten species of Amphibians being monitored in Alberta: Long-toed Salamander, Tiger Salamander, Plains Spadefoot Toad, Boreal (Western) Toad, Great Plains Toad, Canadian Toad, Boreal Chorus Frog, Wood Frog, Northern Leopard Frog, and Spotted Frog.

***Note:*** The Western Toad is now called the Boreal Toad. The Spotted Frog is now called the Columbia Spotted Frog, but to make it easier for students, Columbia has been eliminated.

Create three columns of information:

1. Column one has **coloured pictures** - Mount the pictures (without their names) onto poster board. Keep a record of their names as you make the poster so you will have the answer key for the students.
2. Column two has **names** - Use the page 20 with numbered nameplates for the students to match to the pictures.
3. Column three has **maps of Alberta showing species' distributions** - Photocopy each of the 10 species' distribution maps from the manual. Again, remember to keep track of which map belongs to each species so you are able to make an answer key. Use letters by each map to create your answer key, for example, the first picture is of the Northern Leopard Frog, matched with number 9 name plate with Northern Leopard Frog and matched with its distribution map that you have labeled C.

*Materials Required*

- Cut out the colour plates on pages 6 to 10 in the *Alberta Amphibian Monitoring Manual*
- Distribution maps of Alberta's 10 amphibians (copy pages 13, 16, 20, 22, 24, 26, 29, 31, 34, 36 from the *Alberta Amphibian Monitoring Manual*)
- *Nameplates*, copy page 20 in this guide
- *Letters A to J* to identify distribution maps, copy page 21 in this guide

*Procedure*

This is an excellent resource for students to self-test their knowledge about each amphibian species. It will also serve to be a resource by the teacher to determine the species the class may find in their area when they go out to monitor. Have an answer key available so students are able to check their responses.

***Ideas for Use***

- Call students up to the front of the class to identify specific species of amphibians. Students can use their fingers to go from one column to another without defacing the poster.
- Divide the class into five groups. Give each group two amphibians to identify and find their distribution. Give each group two different amphibians every day to identify.
- Use string to connect the pictures to its name and to its location.
- Use the poster to periodically review the students' identification skills so they are able to identify any amphibian species they find on-site with confidence.
- Have students test each other and keep score. Watch their scores improve as they become familiar with each species.

Use the ten amphibian labels below to assist students in identifying the coloured pictures by matching the species name with its picture. Cut apart. ✂

1. Long-toed Salamander

2. Tiger Salamander

3. Plains Spadefoot

4. Boreal Toad

5. Great Plains Toad

6. Canadian Toad

7. Boreal Chorus Frog

8. Wood Frog

9. Northern Leopard Frog

10. Spotted Frog

Use the letters below to label the photocopies of the distribution maps of the 10 amphibian species from the *Alberta Amphibian Monitoring Manual.* Cut apart. ✂

A.

B.

C.

D.

E.

F.

G.

H.

I.

J.

## Activity Two - Frog or Toad?

*Summary*

Students will determine the characteristics that best describe frogs, toads and salamanders.

*Materials Required*

- Frog or Toad? Worksheet, copy page 23, one per student

*Procedure*

Give students enough time to complete the activity sheet. Review the answers. Go to **Answers for Activity Sheets**, page 56 for answers.

## Activity Three - Amphibian Designs

*Summary*

Students will use the silhouettes to design and colour the salamanders, toads and frogs to resemble the Alberta species that can be found in their monitoring area.

*Materials Required*

- colouring materials (crayons, markers, pencils)
- scissors
- *Amphibian Designs*, copy page 24, one or two copies per student
- poster of Alberta Amphibians for colouration and markings reference, or photo plates from the *Alberta Amphibian Monitoring Program Manual*, pages 6 to 10.
- Completed worksheet *Look Like A . . . Sounds Like A . . .* pages 27-29. (Optional - This sheet can be used as a reference for colouring the amphibians.)

*Procedure*

Have students color the amphibian silhouettes like species that may be found in your monitoring area. Have students check the distribution maps of the 10 amphibian species to verify their distribution. Use reference materials to color the amphibians accurately. Have students cut out each coloured amphibian. Collect them and place into a box.

***Further Activities***

- Place all the amphibians into a box and randomly draw one out. Have students identify the species by its physical characteristics. Discuss the physical characteristics of each species as they are drawn out of the box.
- As species are drawn out have students imitate the call of each amphibian.
- Have the box full of amphibians for students to self-test their own skills at identifying amphibians.

## Frog or Toad?

Name _____

So what is the difference between a frog, a toad and a salamander? There are actually quite a few differences. Test what you know, by writing ***Frog, Toad,*** or ***Salamander*** beside the statements that represent the species.

| | |
|---|---|
| 1. _____ | The tadpole has a pointed tail a clear membrane around it. |
| 2. _____ | Have dry, rough, "warty" skin. |
| 3. _____ | Spawn looks like a long ribbon of eggs. |
| 4. _____ | End of the tadpole's tail is rounded and surrounded by an opaque membrane. |
| 5. _____ | Have enlarged parotoid (poison) glands behind the eyes on the shoulders. |
| 6. _____ | Its shape looks like a lizard, feels like a frog. |
| 7. _____ | Have wide waists. |
| 8. _____ | The eggs are laid in a large jelly mass. |
| 9. _____ | Have knob-like projections on their hind feet for digging in the soil. |
| 10. _____ | One defense mechanism they have is to urinate so they are unappetizing if caught by a predator. |
| 11. _____ | Not much webbing on hind feet. |
| 12. _____ | Smooth, moist skin. |
| 13. _____ | Can be found far from water. |
| 14. _____ | Have long legs for jumping. |
| 15. _____ | Have small teeth on their upper jaws for holding prey, not for chewing or biting. |
| 16. _____ | Need to live close to moist environments so their skin will not dry out. |
| 17. _____ | Have short legs for hopping. |
| 18. _____ | Eggs are laid individually or in small clusters on grasses in water. |
| 19. _____ | Have small waists. |
| 20. _____ | Do not vocalize. |

The statements are generalizations that will help you make distinctions between frogs, toads, and salamanders. Note that there are exceptions to some of the statements above.

## Amphibian Designs

Choose a salamander, toad and/or frog from the silhouettes below. Select a species that you may find at the monitoring site you will be visiting and color in the amphibian silhouette like the real thing. Print your name and the species name on the back and cut out the amphibian(s) carefully with scissors.

Salamander

Toad

Frog

# Two Activities to Help Identify Amphibian Calls

***Using the Audio Cassette***

Play the tape so students are able to attune their hearing to the various sounds of amphibians. It takes practice to know each species' call by heart.

***List of calls in chronological order on tape Side A:*** Plains Spadefoot, Western (Boreal) Toad, Great Plains Toad, Dakota Toad, Chorus Frog, Wood Frog, Spotted Frog, Leopard Frog, Bull Snakes, Leopard Frog/Chorus Frog, Dakota Toad/Chorus Frog, Chorus Frog/Wood Frog, Wood Frog/Chorus Frog, Plains Spadefoot/Chorus Frog, and Prairie Rattlesnake. Recording Time: 17 minutes, 30 seconds. (Please note that the species underlined above are on the work sheet *Looks Like A . . .Sounds Like A . . .*) A narrator identifies each call on the tape.

***Note:*** **The Dakota Toad is the Canadian Toad. The Western Toad is the Boreal Toad. The Dakota and Western names are not used anymore.**

## Activity One - Looks Like A . . . Sounds Like A . . .

*Summary*

Students will listen to the audio cassette and determine what each amphibian species sounds like to them. This activity will also help students learn physical characteristics of common amphibian species.

*Materials Required*

- audio cassette entitled, *Amphibians and Reptiles of Alberta*, Side **A**
- tape recorder
- comb, fine-toothed
- balloon, inflated
- activity sheet, *Looks Like A . . . Sounds Like A . . .*, page 27, one per student
- "Looks Like" Descriptions, page 28, one per student
- "Sounds Like" Words, page 29, one per student
- scissors, ones pair per student
- glue, one per student

*Procedure*

1. Give each student a copy of the worksheets, Looks Like A . . .Sounds Like A . . , "Looks Like" Descriptions, and "Sounds Like" Words, pages 27 to 29.
2. Have students cut apart "Looks Like" descriptions and have students match them to amphibian species. Review with students before they glue them onto their sheets.
3. Have students cut apart "Sounds Like" words. Play the tape recording and listen as a class. Discuss each species as they are heard. Decide as a class the words that best describe the amphibian. Have students glue the answers in place.
   ***Note:*** *Remind students that the Canadian Toad is referred to as the Dakota Toad and the Boreal Toad is called the Western Toad on Side A of the audio cassette.*

4. Demonstrations: Inflate the balloon, wet your fingers and rub them along the balloon's surface to make it sound like the Northern Leopard Frog. Use the fine-toothed comb and run your fingers along the comb's teeth to resemble the Boreal Chorus Frog's call.
5. When this worksheet is completed, students can use the descriptions to help them design and color the amphibian silhouettes activity, **Amphibian Designs**, page 24.

## Activity Two - Listen Up

*Summary*

Students will listen to a random selection of eight frog and toad calls to test their knowledge of amphibian calls.

*Materials Required*

- audio cassette entitled, *Amphibians and Reptiles of Alberta*, Side **B**
- tape recorder

*Procedure*

Recorded on Side B of the audiocassette are two sets of randomly ordered calls. They are identified only by their numerical order. Both sets have the same six amphibian calls, just in a different order. Use the sets to test students' knowledge of the calls.

The tape begins with a short introduction then begins with the narrator announcing the set with a 10-second pause after. This long pause is included to allow the teacher to identify the set in advance (Set A or B) without the students knowing which set was going to be heard. If teachers wish to use these two sets repeatedly and with the sets only having six calls, students will likely memorize the order instead of tuning into the calls. A five-second pause follows each of the six calls. The answers for each set A and B are below.

Identification of Amphibian Calls on Side B of Tape

| ***Set A*** | ***Set B*** |
|---|---|
| 1. Boreal Chorus Frog | 1. Spotted Frog |
| 2. Canadian Toad | 2. Northern Leopard Frog |
| 3. Wood Frog | 3. Boreal Chorus Frog |
| 4. Spotted Frog | 4. Canadian Toad |
| 5. Northern Leopard Frog | 5. Boreal Toad |
| 6. Boreal Toad | 6. Wood Frog |

On a piece of paper, have the students make a column with the numbers one to six. Tell them to have their pencils ready and their ears open. The five seconds between the calls will give them enough time to write down the amphibian species. Review their answers after each set.

## Looks Like A . . . Sounds Like A . . . Name _____

Get to know some common Alberta amphibians. First, match descriptions by drawing a line from the amphibian to identifying features. Second, with the rest of the class, listen to the tape recording and glue down a description of the call *to help you remember* what each amphibian sounds like. Share your answers with the class.

| Amphibians | Looks Like . . . | Sounds Like . . . |
|---|---|---|
| 1. **Plains Spadefoot** | | |
| 2. **Boreal Toad** | | |
| 3. **Great Plains Toad** | | |
| 4. **Canadian Toad** | | |
| 5. **Boreal Chorus Toad** | | |
| 6. **Northern Leopard Frog** | | |
| 7. **Spotted Frog** | | |
| 8. **Wood Frog** | | |

## "Looks Like" Descriptions

Cut ✂ apart and glue each one beside the amphibian it describes the best on the **Looks Like A . . . Sounds Like A . . .** sheet.

A. Has a stripe through the eye and continues down the side of the body; three pale stripes on back may be visible.

B. Green or brown with a light-coloured stripe down back; warts are reddish brown surrounded by black. No crest between eyes.

C. Has a pronounced bump between eyes; short limbs; hind feet have a projection used for digging burrows; pupil is vertical; pug-like snout.

D. Either green or brown with a white belly; large dark spots with light borders; light-coloured folds on back.

E. Covered with dark blotches containing small warts; background pale brown-grey or olive green; has prominent L-shaped crest on top head that diverge behind the eyes.

F. Has a "Lone Ranger" mask across eyes; white stripe on jaw; generally brownish and may have white strip down back; hind legs usually striped.

G. Brown or grey-green with brownish-red warts; has two parallel crests on top of head; and has a prominent projection on each back foot for digging.

H. Covered with small, dark spots with small white centers; mostly dark brown with a pink or red legs; eyes are bright yellow or gold; short hind legs.

## "Sounds Like" Words

Cut ✂ apart and glue each one beside the amphibian you think it sounds like on the **Looks Like A . . . Sounds Like A . . .** sheet.

| |
|---|
| I<br>clucking chickens or quacking ducks |
| II<br>fingernail running down length of a comb |
| III<br>mellow peeping or chirping |
| IV<br>quiet helicopter |
| V<br>raspy, high-pitched scream |
| VI<br>snoring and rubbing wet fingers over a balloon |
| VII<br>long, harsh clatter |
| VIII<br>short, duck-like note |

## Alberta Amphibian Monitoring Program - Student Pocket Manual

*Summary*
Students will make their own pocket-sized manual to use as an on-site reference.

*Materials Required*
- double-sided sheet with 16 small pages, copy back to back like master sheet (located at the back of this package) one per student
- stapler (with at least a 10 cm or 4" arm)
- scissors or paper cutter

The Student Pocket Manual was designed so each student is able to have a reference booklet of his or her own to use at the monitoring site. The size was developed so that it can fit into the plastic cases used for bank account passbooks. You may be lucky and able to get some plastic covers donated from a local bank.

### *Contents of the Student Pocket Manual*

Page 1 - ***Cover***, Have students write their name and school name.

Pages 2, 3, 4, 5 - ***Key for Identifying Adult Amphibians***. When students find a mature amphibian, this key will help them correctly identify it. Review the key with students before going on field trip. It is the same key used in the *Alberta Amphibian Monitoring Manual,* pages 4 and 5.

Page 6 - ***Around Amphibians Remember.*** Review this page with students before you visit the monitoring site. Ask them to make a note of other things to keep in mind while there.

Page 7 - This page has a short list of amphibians your class will likely hear. Have students write the names of the species you are likely to find at the monitoring site.

| | |
|---|---|
| Page 8 – Boreal Toad<br>Page 9 – Canadian Toad<br>Page 10 – Boreal Chorus Frog<br>Page 11 – Northern leopard Frog<br>Page 12 – Spotted Frog<br>Page 13 – Wood Frog | *Have students make short notes about each species. Write down any special markings and what the call sounds like.* |

Page 14 – Amphibian Word Search (***Answer*** to Secret Message: <u>*Protect Wetlands*</u>)

Page 15 – Word List for Amphibian Word Search

Back Cover – Identifying Spawn (***Answers:*** 1-B, 2-C, and 3-A)

## *Assembling the Student Manual*

### *Copying*

Copy the manual back to back the same as the master copy sheet in the package. If by chance the master copy is lost or you end up with two separate copies, copy another master like the one below which illustrates the pages paired back to back. The pages typed in ***bold italic*** are on the top of the page, the page numbers not in bold italic are copied on the other side.

| | | | |
|---|---|---|---|
| pages ***9*** & 10 | pages ***8*** & 7 | pages ***5*** & 6 | pages ***12*** & 11 |
| ***Identifying Spawn*** & page 15 | ***Cover page*** & page 2 | pages ***4*** & 3 | page ***13*** & Amphibian Word Search |

### *Folding*

1. There are only three folds! With the cover page visible, orient the page so that the following four pages are along the bottom and are as above: Identifying Spawn, Cover page, page 4 and page 13 (Wood Frog.)
2. **Fold One:** Fold the page in half vertically (fold pages 4 and 13 under) so that now the only two pages visible are: Identifying Spawn and the Cover page. You can see pages 8 and 9 are on the top but they are upside down.
3. **Fold Two:** Make a horizontal fold (fold under pages 8 and 9) so the same two pages are still visible on the bottom: Identifying Spawn and the Cover page.
4. **Fold Three:** Make another vertical fold so the Cover is still on the top.
5. Staple the centre fold with a stapler with at least a 10 cm (4") arm so the staple can reach the centre fold.
6. Use a paper cutter or scissors and trim the top and right side folds.
7. Make enough copies for all students and parent volunteers. Bring extras to the monitoring site.

### *Using*

Use the Student Pocket Manual as a preparation tool. Students will be adequately prepared if the minimum preparation includes: completing the Student Pocket Manual, familiarity with amphibian calls, and instruction for completing the Datasheets (#1 and #2) and Survey Data Working Copy.

Encourage students to use the Pocket Manual as an on-site tool to help them identify adult amphibians. It is also a useful reference for family outings. Students are welcome to monitor sites on their own with their families. Should such situations arise, pass along the contact information. Ideally, monitoring amphibian calls at night is the standard protocol and this is something that can be done more easily in a family situation.

# Mathematics - Collecting and Managing Data

Students will have opportunities to:

- learn and practise data-management skills within the context of monitoring amphibians
- collect data
- use various types of graphs and compare their suitability
- engage in decision-making process as they decide how to display information

## Graphing Amphibian Data

*Summary*

Students will practise data management by determining the best way to display data.

**Types of Graphs**

1. Concrete Graphs – Using actual objects to display information.
2. Pictographs – Using symbols or pictures to represent objects of study. Progress from one picture representing one object to one symbol representing a number of objects.
3. Bar graphs – Using cubes, squares and eventually boxes on grid paper, progress from one square representing one object, then to many objects.
4. Circle Graph – Represent fractions or percents of a whole circle.
5. Line Graph – Using a coordinate system to show a relationship.

***Activity Ideas***

- Make an overhead transparency of page 34, *Table 1: Overview of Data Sent in by Volunteers in the Alberta Amphibian Monitoring Program*. Use the questions on page 33 to discuss the data contained in the table. (Please note that there is an annual update to this table. Future students will be able to make further comparisons of data sent in by volunteers each year. Contact the Alberta Amphibian Monitoring Program Coordinator for a copy, see inside cover for contact information.)
- Make a copy of *Table 2: Actual Data Submitted from a School's Monitoring Site*, page 35, one for each student. Assign students with the task of making one or all three kinds of graphs.
  - Circle Graph - Have students calculate percentages and chart a pie graph for amphibians seen (O). Use the Circle Graph worksheet on page 38 for students. A sample of a completed circle/pie graph is on page 36.
  - Percentage Graph – Use the Percentage of Amphibians Heard at Monitoring Site worksheet on page 39 and have students chart percentages on the square graph as opposed to a circle graph. A sample of a completed graph is shown on page 37.
  - Bar Graph - Have students make a bar graph of amphibians heard (H). Use the Grid for Bar Graph worksheet, page 40 for bar graphs.

Use the overhead transparency of *Table 1: Overview of Data Sent in by Volunteers in the Alberta Amphibian Monitoring Program*, page 34 and the questions below to generate discussion about Alberta amphibians. The table can be copied in a landscape orientation.

***Suggested Questions Using Transparency of Table 1***

1. What is the most frequently heard/seen species? (Boreal Chorus Frog)
2. What is the second most frequently heard/seen species? (Wood Frog)
3. Which toad is the least seen/heard? (Canadian Toad, Plains Spadefoot Toad)
4. Which amphibians are not heard? (salamanders: they don't make any calls)
5. What year had the most number of volunteers involved in the monitoring program? (1997 with 100 people)
6. Are there any amphibians that have significantly declined in observations from one year to the next? (Canadian Toad) Their numbers were low to begin with but declined as well.
7. Which year had the most number of amphibians recorded? (1997 with 24 249 amphibians)
8. Which salamander are you most likely to see? (Tiger Salamander, it also has a larger range in Alberta)
9. Why are there so many numbers of observations? (some volunteers monitor their sites every two weeks or monitor several sites)
10. Which graph(s) is the best way to present this information. (A circle or pie graph to compare both years. Each species represents a portion of the circle graph)
11. Why is a circle graph the best? (The numbers of Boreal Chorus frogs and Wood Frogs are too many units away from the other species. On a bar graph, for example, the units for plotting the amount of frogs would have to go from a small number like 21 (Canadian Toad) to as large as 14 410 (Boreal Chorus Frog.)
12. What is the average number of amphibians seen per visit by observers? (Divide the Number of Observations into the Number of Amphibians. 1996: 4 620 ÷ 675 = **6.8** and in 1997: 24 249 ÷ 734 = **33**)

***Other Questions and Observations:***

***Table 1: Overview of data sent in by volunteers in the Alberta Amphibian Monitoring Program***

| *Species of Amphibians* | 1996 | | 1997 | |
|---|---|---|---|---|
| | *Number of Observations* | *Number of Amphibians* | *Number of Observations* | *Number of Amphibians* |
| **Tiger Salamander** | 25 | 152 | 37 | 299 |
| **Long-toed Salamander** | 4 | 5 | 3 | 170 |
| **Plains Spadefoot Toad** | 8 | 38 | 4 | 33 |
| **Boreal Toad** | 15 | 70 | 39 | 624 |
| **Great Plains Toad** | 6 | 24 | 6 | 57 |
| **Canadian Toad** | 26 | 31 | 15 | 21 |
| **Boreal Chorus Frog** | 326 | 3 362 | 315 | 14 410 |
| **Wood Frog** | 248 | 897 | 311 | 8 121 |
| **Spotted Frog** | 6 | 6 | 8 | 117 |
| **Northern Leopard Frog** | 11 | 35 | 11 | 405 |
| *Total Records* | *675* | *4 620* | *734* | *24 249* |
| *Number of Volunteers* | *85* | | *100* | |

# Graphing Amphibian Data Name _____

***Table 2: Actual Data Submitted from a School's Monitoring Site***

| *Species of Amphibians* | *Data* |
|---|---|
| **Long-toed Salamander** | |
| **Tiger Salamander** | |
| **Plains Spadefoot Toad** | |
| **Western (Boreal) Toad** | **O (10)** |
| **Great Plains Toad** | |
| **Canadian Toad** | **H(3) O(16)** |
| **Boreal Chorus Frog** | **H(3) O(19)** |
| **Northern Leopard Frog** | |
| **Spotted Frog** | |
| **Wood Frog** | **H(3) O(7)** |

1. Draw a bar graph showing the total number of amphibians **seen (O)**.
2. Draw another bar graph showing the number of amphibians **heard (H)**.

Use the Codes below to show the range of the approximate number heard:

**(1)** = one individual
**(2)** = few, 2 to 5
**(3)** = many, calls are distinguishable but overlapping, 6 to 10
**(4)** = very many, 11 to 50
**(5)** = large numbers, full continuous chorus 51+

***Table 3: Circle Graph of Amphibians Seen at Monitoring Site*** - *Sample*

**Percentage of Species Seen (Total 52)**
Boreal Toad 19 %
Canadian Toad 31 %
Boreal Chorus Frog 37 %
Wood Frog 13 %

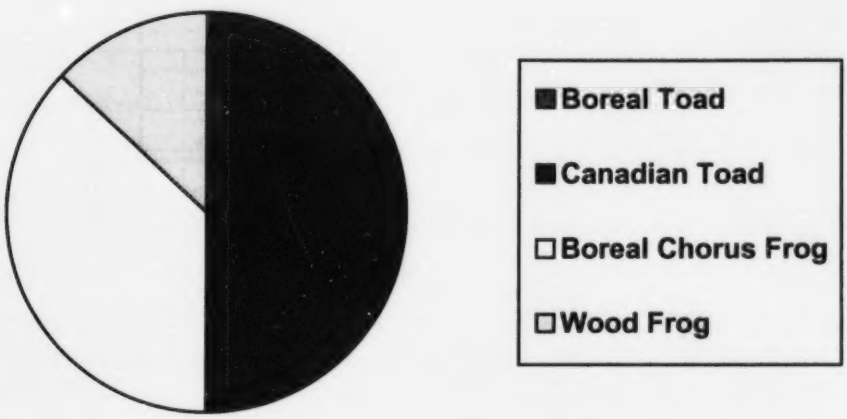
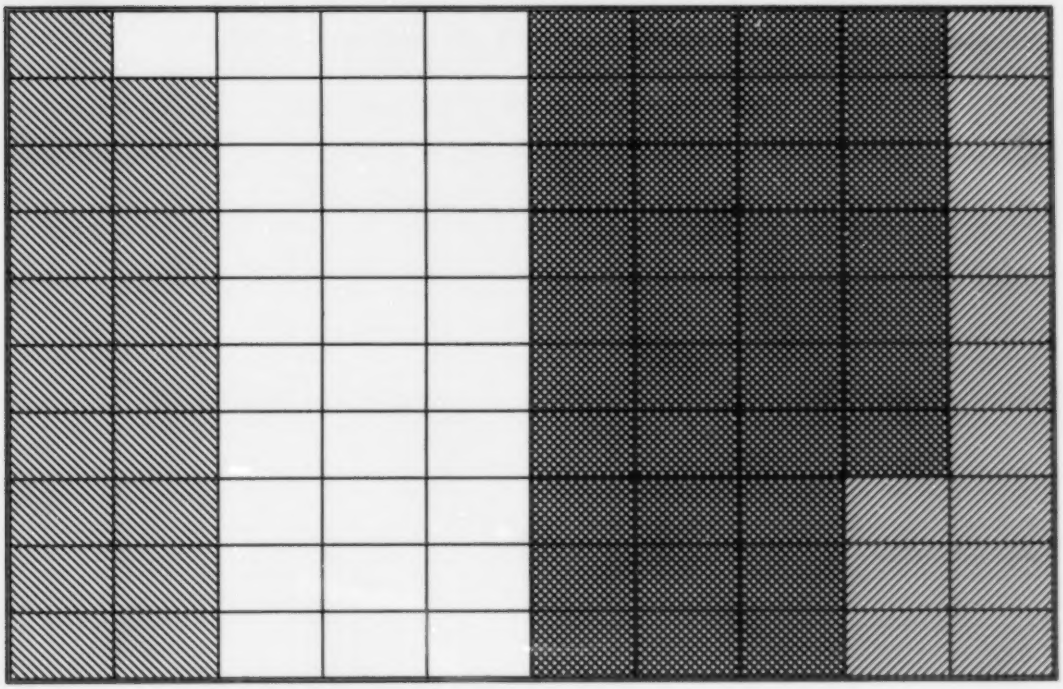
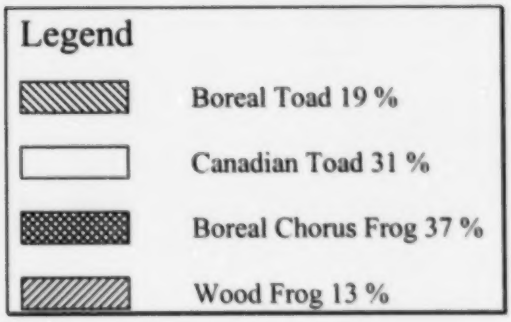


***Table 4: Percentage of Amphibians Observed (O) at Monitoring Site***

Based on ***Table 2: Actual Data Submitted from a School's Monitoring Site,*** page 37.

SAMPLE






Total Number of Amphibians Seen is 52.

# *Circle Graph*

Name _____

Calculate the percentage of amphibian species seen **(O)** and graph below in the circle graph.

***Calculating Percentage***
Sample: Total number of amphibians seen = 80, Observed 17 Wood Frogs.

17 X 100 = 1700  1700 ÷ 80 = 21.25 or **21% are Wood Frogs**

Legend

☐ ☐
☐ ☐
☐ ☐

***Total Number of Amphibians Seen*** _____.

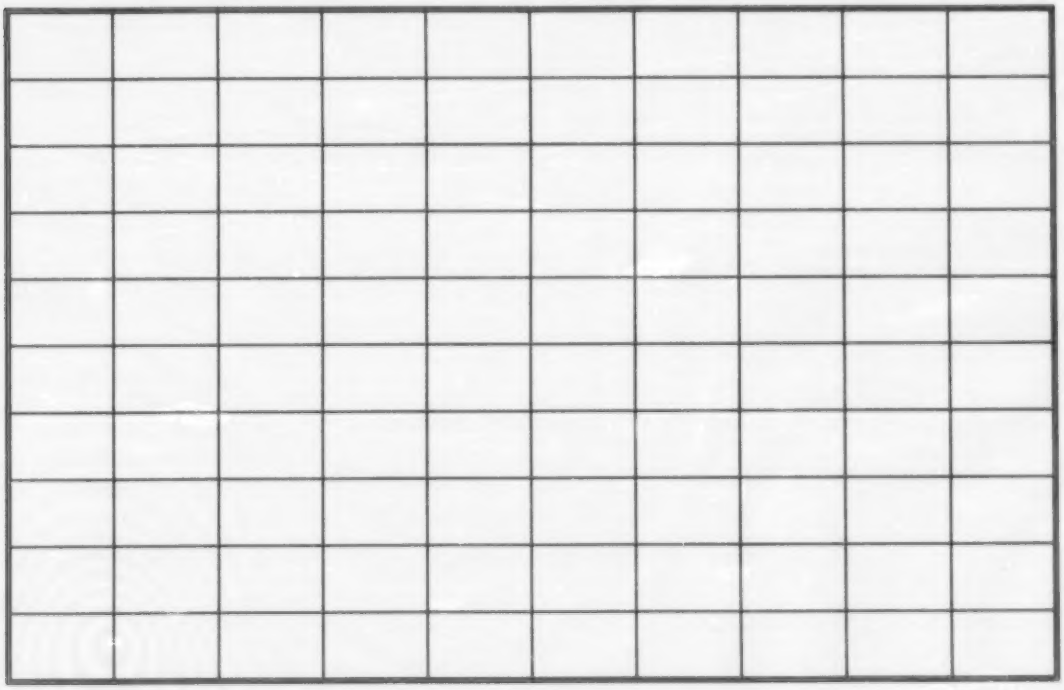
## Percentage of Amphibians Seen at Monitoring Site

Name _____

Calculate the percentage of amphibian species observed **(O)** and graph below.

***Calculating Percentage***
Sample: Total number of amphibians seen = 80, Observed 17 Wood Frogs.

17 X 100 = 1700 1700 ÷ 80 = 21.25 or **21% are Wood Frogs**



Legend

Total Number of Amphibians Seen _____.

# Grid for Bar Graph

Name _____

Chart how many species of amphibians you heard **(H)** at the monitoring site. Determine the value of each square and label the proper axis.

# Amphibian Measurements

*Summary*

Students will calculate the average length of Alberta amphibians from their range of lengths.

*Materials Required*

- **Amphibian Measurements** work sheet, page 42, one copy per student
- metric rulers marked with millimeters
- scrap paper
- pencils

*Procedure*

Have students calculate the average length of each amphibian. Pencil in each species average length on the dotted line. Have students label each line with the length in mm and the species' name.

Answers for the average measurement of each species is on page 56, **Answers for Activity Sheets**.

***Further Activities***

- Have students make a graphic representation of the size ranges of each species. Draw one circle or amphibian shape showing the maximum size of a species. Inside that circle or shape, draw the minimum size. Keep in mind that the measurement is from the end of the nose, over the back to the end of the abdomen.
- Have students practise making estimates of amphibian lengths

## Amphibian Measurements

Name _____

Use the following measurements and determine the average length of each amphibian species. Length is measure from the end of the nose, along the back, to the vent of the amphibian.

Determining average length: Add the two numbers together and divide by two.
Example: length 25-35 mm

**1.** 25
+ 35
60

**2.** 60 ÷ 2 = 30 **Answer:** 30 mm is average size

***Alberta Amphibians*** ***Record your answers below***

1. Long-toed Salamander, length: 50-80 mm _____
2. Tiger Salamander, length: 140-180 mm _____
3. Boreal Toad, length: 55-125 mm _____
4. Canadian Toad, length: 37-75 mm _____
5. Great Plains Toad, length: 45-110 mm _____
6. Plains Spadefoot, length: 35-60 mm _____
7. Boreal Chorus Frog, length: 20-40 mm _____
8. Northern Leopard Frog, length: 50-100 mm _____
9. Spotted Frog, length: 45-100 mm _____
10. Wood Frog, length: 30-60 mm _____

***Use a ruler to draw a line below. The length of each line should represent the average length of each amphibian species. Label each line with the length and the species.***

1. .....
2. .....
3. .....
4. .....
5. .....
6. .....
7. .....
8. .....
9. .....
10. .....

## The Perfect Amphibian Observation Day

To interpret ideal conditions for observing amphibians, students must be able to have the following skills:

- able to read a thermometer (degrees Celsius / °C) outdoors
- able to interpret the Beaufort Wind Scale

### *Suitable Weather Conditions*

- **Air Temperature** - When deciding whether to conduct your amphibian survey, always consider the air temperature first. If air temperature is not approaching the minimum suggested temperature, wait until it does even if it past the recommended date.

  The temperatures listed below are meant as a guide only. If you have heard good frog activity but the temperature is a few degrees lower than listed below, and the other weather conditions are suitable, then go for it.

| *Survey Period* | *Range of Dates* | *Approximate Minimum Air Temp* |
|---|---|---|
| Early Spring | April - May | 7° C |
| Late Spring | May - June | 13° C |
| Summer | June - July | 18-22° C |

***Weather conditions determine amphibian activity better than dates do.***

- **Wind** - Strong winds suppress calling activity and interfere with your ability to hear calls. Wind speed can be described by a verbal characterization, for example, leaves and twigs moving, or the wind whistling through the telephone lines. The Beaufort Wind Scale has a nautical origin and the wind speeds are usually stated in terms of knots, but are replaced by km/h in the table on page 44.

  Survey only when the wind is 0, 1, 2 or 3 according to the Beaufort Wind Scale. If it is windy enough to raise loose paper and move tree branches, then it's too windy to count frogs.

***Beaufort Wind Scale Codes***

| Beaufort Wind Scale | Wind Speed (km/h) | Description |
|---|---|---|
| 0 | < 1.8 | Calm; smoke rises vertically. |
| 1 | 1.8-5.5 | Light air; rising smoke drifts, weather vane inactive. |
| 2 | 6.4-11 | Light breeze; leaves rustle, can feel wind on face. |
| 3 | 12-19 | Gentle breeze; leaves and twigs move around, small flags extend. |
| 4 | 20-30 | Moderate breeze; moves thin branches, raises loose paper. |
| 5 | 31-39 | Fresh breeze; trees sway. |
| 6 | 40-50 | Strong breeze; large branches in motion, whistling heard through telephone lines, umbrellas used with difficulty. |

- **Precipitation** - Ideal conditions are humid, foggy or in a light rain. Heavy rain will probably interfere with your ability to hear calls.

- **Recent Weather History** - Weather that has been dry or unusually cold could suppress calling activity. The best choice would be a warm day after a light rain.

## Getting Ready to Go

***Preparing Students***

Break class into small groups of four students with one adult supervisor. Each group of four students should have the following equipment on site:

- a dip net and ice cream bucket
- *Alberta Amphibian Monitoring Manual Student Pocket Manual* (one for each student)
- clip board with pencil(s)
- thermometer (optional for each group, at least one for the class)
- **Student Data Sheet # 1 – Amphibians**, page 48
- **Student Data Sheet # 2- Habitat Description**, page 49
- **Survey Data Working Copy**, page 50

Students can take turns filling in the data sheets and dipping for specimens. First, they must stay together, keeping in mind that their primary purpose is to listen for and find amphibians. Second they need to make an accurate report on the two data sheets.

***Students Completing the Data Sheets***

Make overhead transparencies of pages 51 to 53. They are samples of how data sheets are to be completed by each group of students. As you go through the data sheets with the students, review and interpret the information submitted.

### Student Data Sheet #1 Amphibians, page 53

It is important on this data sheet that students distinguish between Observed and Heard. When students Observe amphibians, they can visually count and provide an accurate number, so the number beside the **O** code in the brackets is the number of amphibians actually seen. **H** for heard, on the other hand, is an estimate and a Code (from 1 to 5) is used to express the calls heard.

| ***Codes to Describe Observations*** | ***Codes to Describe Number Heard (write in brackets)*** |
|---|---|
| **H** = Heard | **(1)** = one individual |
| **O** = Observed | **(2)** = few, 2 to 5 |
| **O+** = Observed, photographs provided | **(3)** = many, calls are distinguishable but overlapping, 6 to 10 |
| **B** = Breed evidence (eggs in strings or round masses, tadpoles) Write more in **Notes** column. | **(4)** = very many, 11 to 50 |
| | **(5)** = large numbers, full continuous chorus 51+ |

Examples:

| ***Amphibian Species and Data Codes*** | ***Interpretation*** |
|---|---|
| Tiger Salamander **O**(1) | One tiger salamander was seen. **O**(1) |
| Boreal Chorus Frog **H**(4) **O**(1) | These frogs were heard; sounded like very many, estimated from 11 to 50, **H**(4). Only one was seen, **O**(1). |
| Northern Leopard Frog **B**(2 egg masses) **H**(1) | Evidence of breeding was seen, two egg masses, **B**. Only one individual frog was heard, **H**(1) |
| Wood Frog **H**(2) | Wood frogs were heard and it sounded like a few of them, estimate from 2 to 5 frogs, **H**(2) |

### Student Data Sheet #2 Habitat Description, page 49

This data sheet has students investigating the habitat itself and has three major components: environmental conditions, a map, and habitat information.

1. **Environmental Conditions** - Students should determine the immediate conditions of the site. For example, temperature, percentage of cloud cover, wind (refer to Beaufort Wind Scale), and interference of noises such as highway traffic should be noted.
2. **Map** - Each group of four students will draw a map of the wetland site and activities surrounding the wetland. Encourage students to use a legend to map vegetation types, location of roads, land use activities, or other waterbodies nearby.
3. **Habitat Information** - Have students describe, to the best of their abilities, the activities in the surrounding landscape. What is happening to the land around the site? Describe its location: Is it a dugout on a farm? Is it still water in a woodlot? Students should strive to be as descriptive as possible so that a person reading the data sheet can picture the site accurately.

### Survey Data Working Copy, page 50

Each group of students may use this activity sheet on site. It is intended as a working sheet for field notes and not for good copy. The *Survey Data Working Copy* can be used for three purposes:

1. **Identification** - It may help students who have difficulty identifying amphibians by providing the opportunity to record their colourations and markings. Have students use the frog silhouettes to color in markings or to record any abnormalities.
2. **Measurements** – A measuring guide is provided on the right side of the page so students are able to estimate or measure amphibians from the end of the nose to the vent.
3. **Keeping Count** – A space is provided for students to keep a tally of each species observed. For example, 𝍸 means 5 of the same species, 𝍸 II means 7 and so on.

## Teacher Evaluation and Official Datasheet

There are two components to the teacher's final report: an official datasheet and a teacher evaluation of the educational component of the program.

1. **Alberta Amphibian Monitoring Program Datasheet**
   The data from the student datasheets must be compiled into a final and official report. This is the last page of the *Alberta Amphibian Monitoring Program Manual*. Make a copy for next year's survey before you fill it out. As a volunteer in this program, your responsibility is to complete the Datasheet as accurately as possible and maintain a commitment to monitoring at least the same site annually.

   ***Note:*** The **Observation Location** is important. Complete one of the three choices offered on the official Alberta Amphibian Monitoring Program Datasheet: Latitude **or** ATS **or** UTM (which can be taken with a Global Positioning System unit or read off a map).

   Feel free to staple together and send in the students' data sheets. They may be used in teacher workshops or as samples in subsequent printings of this teacher guide. ***You must, however, compile all the data into one final report using the official data sheet.***

   Submit photographs to support the final report. Photographs may also be published in the *Alberta Amphibian Monitoring Program's* newsletter entitled, ***Croaks and Trills***. Please identify the individual(s) and describe the activity on the back of each photograph. Also get permission to use the photo from the students (and their parents) pictured in them. Refer to **Supporting Resources**, page 64 for more information about the newsletter.

2. **Teacher Evaluation**
   Please take a few moments to complete the teacher evaluation form. Your feedback is appreciated and will make improvements to this educational component of the monitoring program. The evaluation form is located at the back of the program located on page 70.

## Expect a Reply

Classrooms submitting final reports will receive a certificate of their participation. It's our way of saying thank you and also to let students know that what they did is important research. Send in your reports early to avoid disappointment and to ensure that you will receive your certificate before the school year is finished.

# Student Data Sheet # 1 - Amphibians

Date of Visit to Monitoring Site (dd/mm/yr):

_____

Time of Observations (write in 24 hour):

_____

| *Alberta Amphibians* | *Data* | *Notes* |
|---|---|---|
| Long-toed Salamander | | |
| Tiger Salamander | | |
| Plains Spadefoot Toad | | |
| Western Boreal Toad | | |
| Great Plains Toad | | |
| Canadian Toad | | |
| Boreal Chorus Frog | | |
| Northern Leopard Frog | | |
| Spotted Frog | | |
| Wood Frog | | |

Rate your Identification Skills (circle one): **1** Not Sure **2** **3** Moderately Sure **4** **5** Absolutely Sure

***Codes to Describe <u>Observations</u>***
**H** = Heard
**O** = Observed
**O+** = Observed, photographs provided
**B** = Breed evidence (eggs in strings or round masses, tadpoles) Write more in **Notes** column.

***Codes to Describe Number <u>Heard</u> (write in brackets)***
**(1)** = one individual
**(2)** = few, 2 to 5
**(3)** = many, calls are distinguishable but overlapping, 6 to 10
**(4)** = very many, 11 to 50
**(5)** = large numbers, full continuous chorus 51+

# Student Data Sheet # 2 - Habitat Description

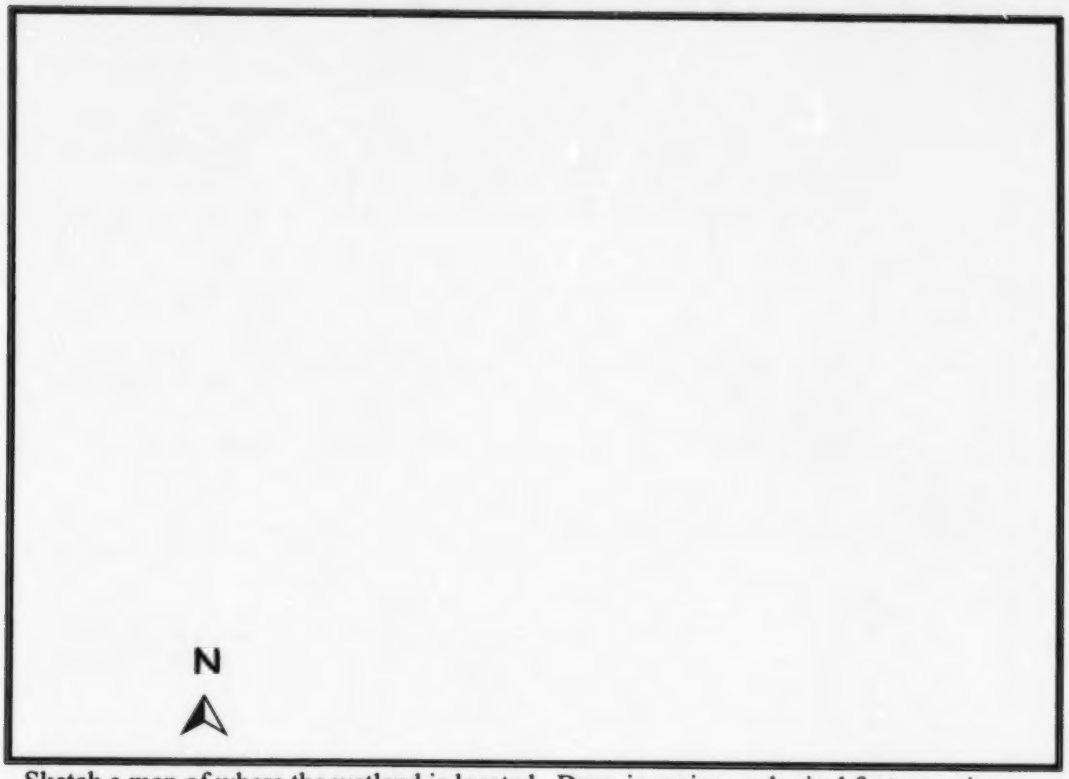
## *Environmental Conditions*

**Air Temperature:** _____ °C

**Cloud Cover** (estimate percentage): _____%

**Wind** (circle one): Calm Light Gentle Moderate Fresh Breeze Strong

**Noise Interference** (circle one): Yes No Explain:




Sketch a map of where the wetland is located. Draw in major geological features, rivers, lakes, roads, and how the land is used around the wetland.

## *Habitat Information* (circle one in each category)

**Habitat Condition:** Natural Disturbed

**Land Use:** Undeveloped Grazed Mowed Agricultural Urban Logged (in last 10 yrs) Oilfield Other: _____

**Habitat Description:** Lake Bog Woodland Wet Meadow Ditch Pond Puddle Stream Dugout Grassland Spring Swamp Bog Marsh Other Wetland: _____

**Water Flow:** Still/Slow Moving (you can hear it)

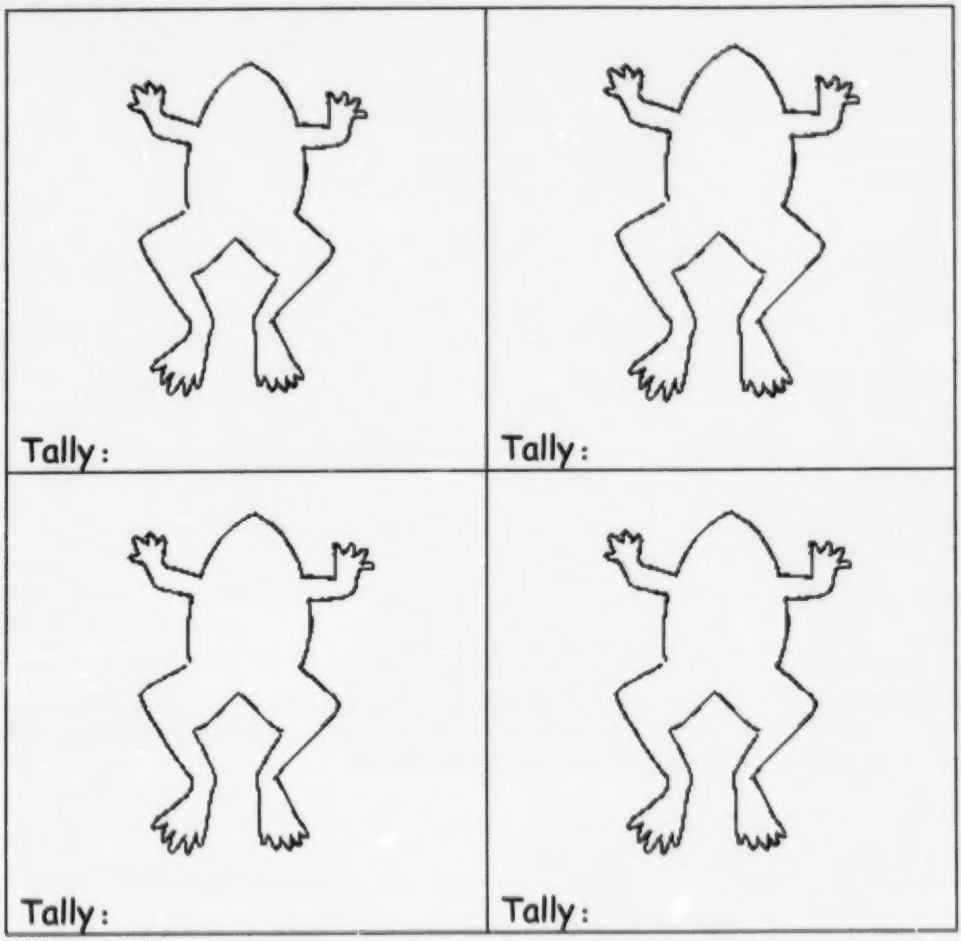
**Drainage:** Permanent Temporary Seasonal

# Survey Data Working Copy

Group Members: _____ _____

_____ _____

Use the frog silhouettes below to color in markings or to record any deformities. If you are able, take measurements from the end of the nose to the base of the spine. You can also use the spaces as a working copy to keep a tally of the amphibian species you see.



## *Sample* Student Data Sheet # 1 - Amphibians

Date of Visit to Monitoring Site (dd/mm/yr): 05/19/99 .
Time of Observations (write in 24 hour): 1:30 to 3:00 p.m. .

| *Alberta Amphibians* | *Data* | *Notes* |
|---|---|---|
| Long-toed Salamander | 𝍸 | Yellow stripe |
| Tiger Salamander | | |
| Plains Spadefoot | | |
| Boreal Toad | III | |
| Great Plains Toad | | |
| Canadian Toad | | |
| Boreal Chorus Frog | | |
| Northern Leopard Frog | | |
| Spotted Frog | 𝍸 | |
| Wood Frog | | |

Rate your Identification Skills (circle one): **1** Not Sure **2** **3** Moderately Sure **4** **5** Absolutely Sure

***Codes to Describe Observations***
**H** = Heard
**O** = Observed
**O+** = Observed, photographs provided
**B** = Breed evidence (eggs in strings or round masses, tadpoles) Write more in **Notes** column.

***Codes to Describe Number Heard (write in brackets)***
**(1)** = one individual
**(2)** = few, 2 to 5
**(3)** = many, calls are distinguishable but overlapping, 6 to 10
**(4)** = very many, 11 to 50
**(5)** = large numbers, full continuous chorus 51+

## *Sample*

# Student Data Sheet # 2 - Habitat Description

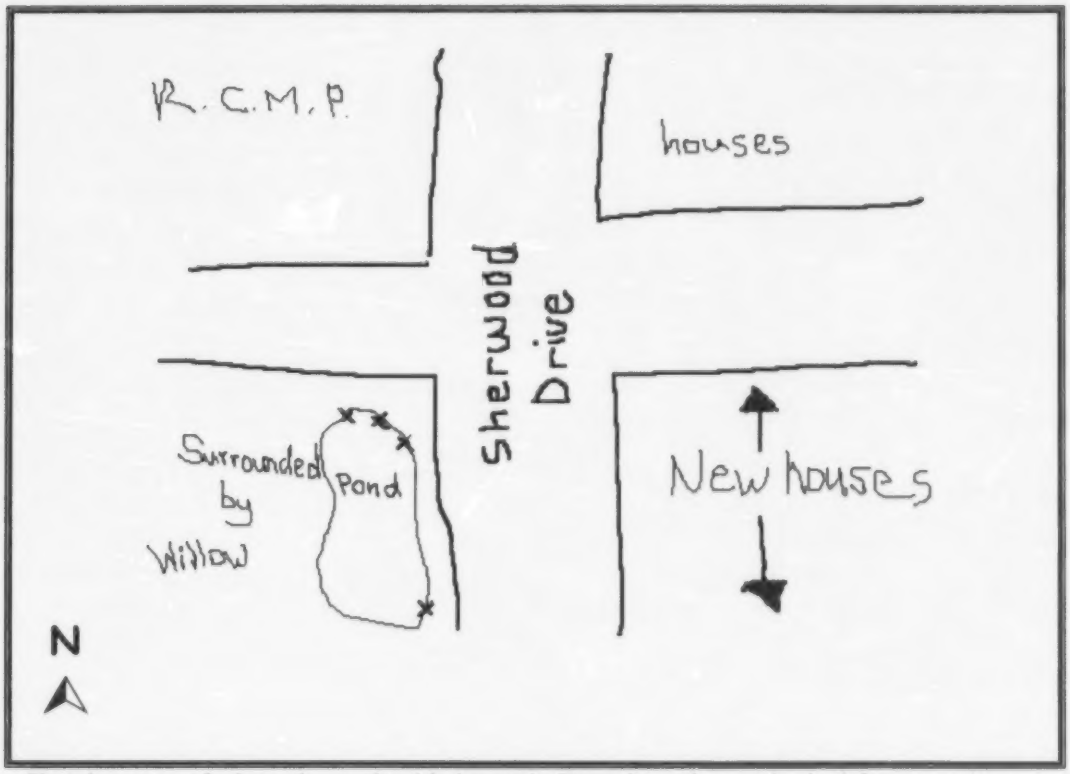
### *Environmental Conditions*

**Air Temperature °C:** _____ °C

**Cloud Cover** (estimate percentage): _____ %

**Wind** (circle one): Calm Light Gentle Moderate Fresh Breeze Strong

**Noise Interference** (circle one): Yes No Explain:




Sketch a map of where the wetland is located. Draw in major geological features, rivers, lakes, roads, and how the land is used around the wetland.

### *Habitat Information* (circle one in each category)

**Habitat Condition:** Natural Disturbed

**Land Use:** Undeveloped Grazed Mowed Agricultural Urban Logged (in last 10 yrs) Oilfield
Other: _____

**Habitat Description:** Lake Bog Woodland Wet Meadow Ditch Pond Puddle Stream
Dugout Grassland Spring Swamp Bog Marsh Other Wetland: _____

**Water Flow:** Still/Slow Moving (you can hear it)

**Drainage:** Permanent Temporary Seasonal

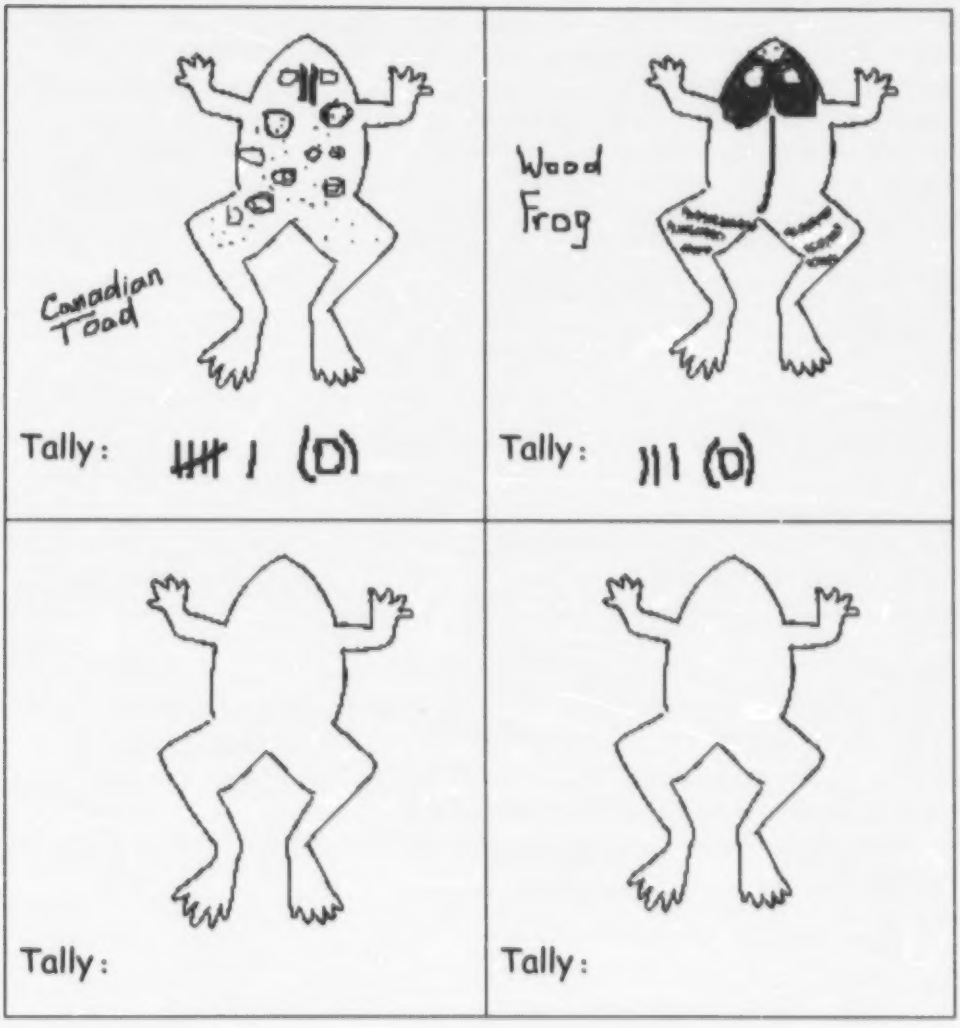
***Sample***

# Survey Data Working Copy

Group Members: _____ _____

_____ _____

Use the frog silhouettes below to color in markings or to record any deformities. If you are able, take measurements from the end of the nose to the base of the spine. You can also use the spaces as a working copy to keep a tally of the amphibian species you see.



## Creating, Maintaining and Protecting Habitat

Often when people learn about wildlife and work on a project that involves hands-on participation, like monitoring amphibians, they want to learn more and do more. It seems that when we learn more, we become responsible. When a class of students discusses the possibility of doing something more for amphibians because they feel connected to them, grab their enthusiasm, create some momentum, and try one of the projects below. Students may develop their own creative ideas.

***Create Habitat***

- Build a pond to attract frogs, toads and salamanders. The pond should be at least one half metre deep so some amphibians are able to hibernate on the bottom. More information is available in the book, ***Backyard Habitat for Canada's Wildlife***, refer to **Supporting Resources** section in this program beginning on page 64.
- Made a **toad house**. Use a clay flowerpot that has a 20 cm diameter. Place the pot upside down in a shady spot and near some water. Knock out a small opening (8 cm X 4 cm) for a door. You can also make a **toad hole**. Dig a hole about 25 cm X 25 cm. Put sand on the bottom of the hole and use flat rocks to make a ceiling. The inside chamber of the toad hole should be about 20 cm X 20 cm. Use a 7.5 cm diameter pipe (cut to a length of 12 cm) and place it so that it goes diagonally into the hole. Plant a small plant near the opening for shade.

***Maintain Habitat***

- Adopt a wetland. Do an annual clean-up and monitor amphibians and other wildlife species at the site. Put up some signage about the site for others to learn what is there.
- Support groups and organizations that help wetlands such as World Wildlife Fund, Ducks Unlimited, and Canadian Nature Federation. Refer to *Supporting Resources* for organizations and their contact information, page 67. Become a member, learn more and provide financial support so their messages can reach more people.

***Protect habitat***

- Contact local landowners about the wetland(s) in the area. Prepare a letter/newsletter about the importance of wetlands and what you would like them to do to help.
- Write a letter to a local politician responsible for the jurisdiction where your school or a wetland of concern is located. Tell him or her about the importance of wetlands, and request their assistance in protecting local wetlands and keeping them in our local landscapes.

## Other Ways to Keep Wildlife in Our Lives

***Educate Others***

- Write and perform a play for a school assembly for younger grades or make a video to tell the rest of the school about amphibians.
- Make arrangements for a naturalist or a biologist to speak to your class about amphibians or wetlands.
- Beautify the schoolyard or a local green area.

***The R"s in Wildlife – Reduce, Reuse and Recycle***

- Reduce energy use by turning off lights and appliances when not in use.
- Reduce water consumption by turning the tap off when brushing your teeth, taking shorter showers, and using water-saving devices in the toilet tank and showerheads.
- Reduce use of products and food with excessive packaging.
- Reduce your overall consumption of non-essential items such as plastic grocery bags or excessive use and wastage of paper and other products that come from the environment.
- Reuse materials before you recycle them or discard them. This includes using the other side of a piece of paper, plastic bags, twist ties, clothes, toys and so on. Be creative.
- Recycle materials in your home and community.
- Really participate in a variety of activities: have a garage sale, start a compost at home, use alternatives to pesticides and ozone-depleting chemicals, do not use chemicals on your lawn or garden, use a lunch box instead of paper bags for lunch, donate old toys and books to charity, or organize a toy or book swap in your school. What else can you think of?

# Answers for Activity Sheets

***Answer to*** **A Quiz for Inquisitive Minds**, page 15

P h e n o l o g y (1- p, 2-h, 3-e, 4-n, 5-o, 6-l, 7-o, 8-g, and 9-y)

***Discussion re*** A Quiz for Inquisitive Minds, page 15

1. **Answer A.** This is true and that's why amphibians prefer particular conditions. Refer to *The Perfect Amphibian Observation Day*, page 43.
2. **Answer B** is a Marsh. 2A is a bog.
3. **Answer A.** True. Use the information from the *Wetlands: Webbed Feet Not Required* poster education kit to make a list of threatened species in Alberta.
4. The correct **answer is A**. Wetlands act like giant *sponges* because they provide places to store water. B - Contamination will accumulate in low-lying areas that are wetlands but this is not the correct answer. C. Rice fields is incorrect – Wild rice though, is grown in northern Alberta around the edges of wetlands in the shallow water but we cannot generalize and say all wetlands are like rice fields.
5. **Answer B.** One Purple Loosestrife plant produces over one million seeds. Poison Ivy is a woodland plant. C. Western Blue Flag (looks like an iris) is a threatened wetland species.
6. **Answer B.** People frequently confuse the bulrush and the cattail. They are completely different plants. Find pictures of both plants to show students.
7. **Answer B.** Male frogs and toads call during breeding season. Calling surveys are run in those months when the local species are expected to breed. People conducting calling surveys are listening for distinct calls, as well as the chirps, chuckles and peeps of amphibians.
8. **Answer C.** In A, **UV** stands for **ultraviolet**. Experiments in laboratories and in the field have shown that UV radiation interferes with the development of eggs in some species. B - Acid rain makes wetlands acid and unsuitable for amphibians. C - Some of amphibians' predators are: Great Blue Heron and other birds, fish, other adult frogs, skunks, raccoons, and other mammals.
9. **Answer A** - Agriculture, urban development and road construction is the correct answer. Farmers are learning to leave wetlands for wildlife. Some roads are being built around instead of through large wetlands, and laws are now in place to protect wetlands. C - Peat moss is extracted from bogs in northern Alberta but is not the primary cause of wetland drainage. If large quantities and the living surface are destroyed, it will not renew itself. Mining companies are responsible for reclaiming a harvest site.

*Phenology* (pronounced fen-ology) is the study of periodic biological phenomena, for example, migration, flowering, and breeding as related to climate. The time of year when amphibians breed, whether they breed in one burst or over a period of weeks, can vary from one year to the next. Although calling surveys rely on regularity of breeding times for specific frogs and toads, annual variances make it difficult to provide exact dates for conducting calling surveys.

***Answers*** to ***Frog or Toad?***, page 23

1-Frog, 2-Toad, 3-Toad, 4-Toad, 5-Toad, 6-Salamander, 7-Toad, 8-Frog, 9-Toad, 10-Toad, 11-Toad, 12-Frog, 13-Toad, 14-Frog, 15-Frog, 16-Frog and Salamander, 17-Toad, 18-Salamander, 19-Frog, and 20-Salamander.

Listen Up - page 26

***Identification of Amphibian Calls on Side B of Tape***

***Set A***

7. Boreal Chorus Frog
8. Canadian Toad
9. Wood Frog
10. Spotted Frog
11. Northern leopard Frog
12. Boreal Toad

***Set B***

1. Spotted Frog
2. Northern Leopard Frog
3. Boreal Chorus Frog
4. Canadian Toad
5. Boreal Toad
6. Wood Frog

***Answers*** to Looks Like A . . . Sounds Like A . . ., page 27

*Clue:* Toads are described with warts, frogs are not.

1. **Plains Spadefoot** - VIII and C
2. **Boreal Toad** - III and B
3. **Great Plains Toad** - VII and E
4. **Canadian Toad** - V and G
5. **Boreal Chorus Frog** - II and A
2. **Northern Leopard Frog** - VI and D
7. **Spotted Frog** - IV and H
8. **Wood Frog** - I and F

***Answers to*** Amphibian Measurements, page 42

Long-toed Salamander 140 mm, Tiger Salamander 160 mm, Boreal Toad 90 mm, Canadian Toad 56 mm, Great Plains Toad 77.5 mm, Plains Spadefoot 47.5 mm, Boreal Chorus Frog 30 mm, Northern Leopard Frog 75 mm, Spotted Frog 72.5 mm, and Wood Frog 45 mm

***Answers to*** Alberta Amphibian Monitoring Program - Student Pocket Manual

- Answer to ***Amphibian Word Search***, page 13
  Secret Message: *Protect Wetlands*

- Answer to ***Identifying Spawn***, back cover
  1-B, 2-C, and 3-A.

## A Slough of Other Activity Ideas

### Suggestions for the Teacher

- Begin an Amphibian Monitoring Program binder. Use it to store current information and subsequent years of data obtained by students. Make comparisons of the data from year to year from the same wetland site being monitored.
- Have students write Haiku and Tanka while exploring at the site. Haiku and Tanka are forms of Japanese poetry that are commonly written about nature. Haiku has three lines, the first line has five syllables, the second has seven syllables and the third line has five syllables (5,7,5). Tanka has five lines: the first and third lines have five syllables, the second, fourth and fifth lines have seven syllables in each (5,7,5,7,7).
- Write a poem beginning with *"What to do when you're stuck in the goo."*
- Organize a school Amphibian Awareness assembly. Prepare a slide show and script and tell the whole school about the project
- Have an amphibian day, week or month. Give the month of February a new name—*Froguary*. Educate others about amphibians.
- Make *Frog Watchers Wanted* posters for the community. Have people from your community help with monitoring Alberta amphibians.
- Wear green on the day of collecting amphibian data. Call yourselves Green Teams.
- Borrow some amphibian books from your school and local libraries.
- Learn more about amphibians around the world. This will support Social Studies curriculum where students are learning about various countries. Investigate the amphibians living in China and Greece (grade 6) and United Kingdom, France and United States (grade 5).
- Have students practice the process of developing a bill to protect amphibians in Alberta. (Supports Social Studies: Local government, Passing a Bill)
- Profile a frog of the month on your classroom door.
- Save some habitat for amphibians.
- Make a toad hideout.
- Assign students to search through old ***National Geographic*** magazines to find photographs and articles written about frogs, toads, salamanders, and newts.
- Make a collage showing amphibians around the world.
- Investigate the image frogs and toads have in children's literature. Examples are the ever-popular stories about Frog and Toad or Sleepy Hollow stories.
- Investigate the use of frog words in our vocabulary, for example, "Hop to it."
- List and investigate any myths surrounding amphibians, for example, catching warts from frogs and toads. Discuss how Tom Sawyer got rid of his warts.
- Write stories or fables about amphibians. For example, "How the Wetlands Came to Be" or "Why the Frog Jumps and the Toad Hops."

## Suggestions for the Students

- Begin a Frog File to store all the information and pictures about frogs, toads and amphibians.
- Tell some feeble frog jokes.
- Think up a board game. Include obstacles that an amphibian encounters throughout its life, for example, roads and vehicles, ponds drying up, predators such as skunks and dogs, land use issues such as pollution running off into water body, development, kids collecting tadpoles, sheltered areas like shade and rocks and grass. Skip turns, miss turns, and leap forward.
- Adopt a water body that you and your family can visit regularly. Never go without adult supervision. Monitor the amphibian population there.
- Make up a cartoon strip with an amphibian as the main character.
- Make a flipbook of a tadpole swimming or a froglet changing to an adult.
- Play leapfrog.
- Become an amphibian namedropper. Get to know the *Latin* names of common Alberta amphibians. "Have you ever met *Rana pipiens*?"
- Discuss amphibians and their habitat at the dinner table with your family. Use a few big words to impress them. For example, "Ephemeral water might be good for ducks but not so good for frogs!" Throw in some *Latin* too.
- Make up a one-framed cartoon with an amphibian reflecting on the environmental issues affecting its life.
- Write a newspaper article for the local paper. Use a headline such as: "At the Sound of the Croak, Students were all Ears."

## Specifications for Amphibian Board Game

Include the following obstacles and advances on your board game. Obstacles and advances are based on actual facts that amphibians may encounter throughout their lives. Consider having the game start with life as spawn and ending at wintertime or after first breeding. Along the way there will be things that may help or hinder an amphibian's life. Work with a friend and make the game have 52 squares to represent the number of weeks in a year.

***Include all of some of the following suggestions. Feel free to change any of the squares.***

Start
Found a mate. Take another turn.
Pond goes dry, eggs die. Return to Start.
Most of brother and sister spawn eaten by predators.
Increase in UV affects eggs. Miss a turn.
Lots of food. Take a shortcut.
Celebrate, you're a tadpole.
Collected by kids. Miss two turns.
Party time, you've grown to a froglet.
Wetland drained for development. Back to start.
Grown now as adult.
Pollution affects ability to fight off disease. Go back six spaces.
Hit by a car. Go back to start.
Beware of Great Blue Heron. Back one space.
Birthplace protected. Take another turn.
Finish. Found a great place to hibernate!

***What else will you include?***

_____

_____

Don't forget to include drawings of amphibian's habitat. Make it real!

***The Rules for the Amphibian Board Game***

1. Throw a 6, 5, 4, 3, 2, or 1 to start.
2. No cheating!
3. No making faces at your opponent.
4. No arguing with your classmates.
5. No bragging if you win.
6. No sulking if you lose.

Have Fun!

## Some Green One-liners

Why are frogs so happy?
*They eat whatever bugs them.*

What happens when two frogs collide?
*They get tongue-tied!*

How does a frog feel when it has a broken leg?
*Unhoppy.*

What happened to the frog's car when the parking meter expired?
*It got toad!*

What is a frog's favorite time of year?
*Leap Year!*

What did the frog say to the fly?
*"You are really starting to bug me."*

What did the frog order at the fast food restaurant?
*French flies and a diet Croak.*

What do you call a frog's favorite drink?
*Croaka-Cola!*

How deep can a frog go?
*Knee-deep, knee-deep!*

What does a bankrupt frog say?
*"Baroke, baroke, baroke!"*

## Glossary

| | |
|---|---|
| Amphibian | A member of the group *Amphibia* - a cold-blooded animal with a backbone and bony skeleton that lays jelly-covered eggs that hatch into tadpoles. All frogs and toads, along with newts and salamanders are amphibians. "Amphibian" means "both lives"; most amphibians begin their lives in water, but then live mainly on land when full grown. |
| Anuran | A member of the frog and toad group which has the scientific name *Anura*, meaning "tail-less." |
| Cold-blooded | A common term to describe an animal that does not make its own heat inside its body to keep itself warm. The surrounding temperature determines its body temperature. The term cold-blooded can be misleading because they do warm themselves in a hot environment; their blood is not always cold. They can become warmer than the air around them by basking in the sun to raise their temperature above ambient (surrounding) temperature or cool off by moving into the shade. |
| Cranial Crest | A bony ridge over a toad's eye. |
| Dorsolateral Fold | A crease in the body area where the back and sides meet. |
| Ectothermic | Commonly known as cold-blooded. Ectothermic means to obtain body heat from external sources like its surroundings. |
| Froglet | A common name for a young frog that has changed shape and is no longer a tadpole, but that is not yet a full-grown adult frog. |
| Gills | Organs used to breathe underwater. |
| Hibernation | A sleep-like state that some animals go into during winter. The body temperature drops and the metabolic rate slows down; the animal uses less energy and does not need as much food to survive. |
| Invertebrates | Animals without backbones, for example, insects and worms. |
| Larva | The young or immature form of an animal that hatches from an egg. A larva does not look much like its parent. For example, tadpoles are frog larvae. |

| | |
|---|---|
| Metamorphosis | A drastic change in body shape like a tadpole changes into a frog. |
| Mucus | A slippery, slimy substance that coats the skin of many types of frogs and toads, as well as other creatures such as slugs and worms. It helps to prevent the skin from drying out and makes it slippery and difficult for predators to grasp. |
| Neoteny | The phenomenon salamanders demonstrate when they never leave the aquatic stage but still become mature adults because of the dry environments sometimes found on the prairies. Occurs sometimes in the Tiger Salamander. |
| Parotid Gland | A body part behind the ear or near the jaw. In frogs and toads it makes a foul-tasting or poisonous fluid for protection against enemies. In humans the parotid gland makes salvia and swells up painfully when you get mumps. |
| Poikilothermic | Means body temperature fluctuates with the surroundings. The terms *ectothermic* and *poikilothermic* are used together to describe an animal. For example, an animal that is ectothermic is also poikilothermic.<br><br>Mammals, humans too, are commonly describes as being warm-blooded. In fact, humans are *endothermic*, which means we obtain heat from our own bodies. We are also *homeothermic*, which means that we maintain a constant temperature of 37° C. |
| Protocol | Directions and specific conventions for monitoring. |
| Tadpole | A common name for the larva of a frog or toad, also known as a pollywog. |
| Toadlet | A common name for a young toad that has changed shape and is no longer a tadpole but is not yet full-grown. |
| Tympanum | Another name for the eardrum. A thin layer of skin located just behind the eye for frogs and toads. Sound bounces off the tympanum and the frog hears by feeling the sounds bounce off. |
| Vocal Sacs | Flexible, balloon-like patches of skin, usually around the face or neck, that swell up with air as an animal makes its songs or calls. Many frogs and toads have vocal sacs and so do howler monkeys. |

## Supporting Resources

### Books

***The Amphibians and Reptiles of Alberta.*** Anthony P. Russell and Aaron M. Bauer. University of Alberta Press: Edmonton. 1993. ISBN 0-88864-262-8. 264 pages. Colour photographs, Table of Contents, Index, Glossary. (new edition due in year 2000)

This is the only field guide for Alberta about its amphibians and reptiles. It contains basic information about amphibians and reptiles, descriptions, illustrations, maps and keys and habitat descriptions for each species. This is an excellent field guide book which can be used as a reference in the school library.

***Backyard Habitat for Canada's Wildlife.*** Canadian Wildlife Federation. 1996. 189 pages. ISBN 1-55029-090-8. Only available from Canadian Wildlife Federation, 2740 Queensview Drive, Ottawa, Ontario K2B 1A2. Toll Free Ordering at 1-800-563-9453. Fax: 613-721-2286. Costs approximately $26.80 including GST and S & H.

This is a useful book should your group decide to create and enhance habitat for wildlife. Topics in this book include creating backyard habitat, community action for wildlife, planting for wildlife, conserving species and special places, backyard projects and community projects.

***The Salamander Room.*** Anne Mazer. Illustrated by Steve Johnson. Dragonfly Books, Alfred A. Knopf. New York: 1994. Softcover. ISBN 0-679-86187-4. 22 pages.

This is a beautifully illustrated book, which reminds us of the importance of leaving all living creatures in their natural wild habitats. The story is about a little boy who brings home a salamander, and then bugs to feed it, and birds to control the bugs, and a pond, and so on until finally the ceiling has lifted off his bedroom just so he can provide the best habitat for the salamander. A wonderful story for all grade levels.

## Brochures

***Alberta's Threatened Wildlife brochure program.*** Alberta Environment. Available from the Information Centre, Alberta Environment, Main Floor, Great West Life Building, 9920 - 108 Street, Edmonton, Alberta T5K 2M4. Tel: (780) 944-0313 (If long distance, then dial toll free 310-000, ask for above number) Fax: 427-4407 E-mail: env.infocent@gov.ab.ca. Also available on the Internet from Alberta Environment (see page 68).

This series of large foldout brochures is an excellent resource for learning about some of Alberta's threatened species. The brochures include color photographs and cover the following topics about each species: status, description, habits, reproduction, food, limiting factors, and management. Specific brochures are available on the following species: Bull Trout, Burrowing Owl, Ferruginous Hawk, Loggerhead Shrike, ***Northern Leopard Frog***, Peregrine Falcon, Piping Plover, Swift Fox, Trumpeter Swan, Woodland Caribou, Western Blue Flag, White Pelican, and Whooping Crane.

***Using Water Wisely: A Personal Guide to Water Conservation.*** 24 pages. This is a good little brochure for students looking to reduce environmental impact. Available from: Information Centre, Alberta Environment, Main Floor, Great West Life Bldg., 9920 - 108 Street, Edmonton, Alberta T5K 2M4. Tel: (780) 944-0313 (If long distance, then dial toll free 310-000, then the Edmonton number) Fax: (780) 427-4407 E-mail: env.infocent@gov.ab.ca Free.

***Water Efficiency Guide.*** A useful brochure about how students can save water on lawns & gardens, kitchen, bathrooms, and general water conservation tips. Available from Aqualta, Education Office, 20th Floor, Capital Square, 10065 Jasper Avenue, Edmonton, Alberta T5J 3B1 Tel: (780) 412-3650

## Education Programs

***Alberta's Threatened Wildlife Education Program.*** Developed by Alberta Environment. Available from Information Centre, Alberta Environment, Main Floor, Great West Life Bldg., 9920 - 108 Street, Edmonton, Alberta T5K 2M4. Tel: (780) 944-0313 (If long distance, then dial toll free 310-000, then the Edmonton number) Fax: 427-4407 E-mail: env.infocent@gov.ab.ca Free.

This education series complements the brochure series entitled, *Alberta's Threatened Wildlife*. The teacher guides contain activities appropriate to particular grade levels and issues associated with the species. The following guides have been developed to support Alberta Learning Curriculum: Northern Leopard Frog (grades K to 3), Bull Trout (grades 5 to 9), Burrowing Owl (grades 1-6), Swift Fox (grades 5 to 9), Trumpeter Swan (grades 7 to 9), and Peregrine Falcon (grades 4 to 9.)

***Green Wing Program.*** Contact: Check you phone book for a local Ducks Unlimited office or Ducks Unlimited Canada, 202, 10470 - 176 Street, Edmonton, Alberta T5S 1L3 Contact: Al Richard, Coordinator, Tel: (780) 489-2002 Fax: (780) 489-1856 E-Mail: a_richard@ducks.ca. Website: www.ducks.ca

The Green Wing Program is a hands-on program to teach young people up to the age of 17 years about the importance of wetlands. Activities are intended to increase awareness and appreciation of wetland and wildlife habitat. It will give teachers lots of ideas for wildlife enhancement projects. Individual memberships are $10 a year. A Leader's Guide to Wetland Activities, and many other educational materials worth looking at.

*Other information available from Ducks Unlimited: Know Your Ducks* poster, *North American Wetland* poster, *Cattail* poster, *Nature Notes* on various wildlife species, and *Wetland Collector Cards.*

***Wetlands: Webbed Feet Not Required.*** Poster education kit. Alberta Environment. Available from Information Centre, Alberta Environment, Main Floor, Great West Life Bldg., 9920 - 108 Street, Edmonton, Alberta T5K 2M4. Tel: (780) 944-0313 (If long distance, then dial toll free 310-000, then the Edmonton number) Fax: 427-4407 E-mail: env.infocent@gov.ab.ca. Free.

This is an excellent resource for classrooms investigating the environmental concerns and wildlife around Alberta's wetlands. This poster education kit contains two large coloured posters of a wetland, activity masters, puzzle pieces of poster, and a teachers guide full of activities for grades 4 to 6. It has direct links with grade five science.

## Magazines

***National Geographic.*** Vol. 195, No. 2, February 1999.
This issue is entitled, *Biodiversity: The Fragile Web.* Page 57 of this issue has a photograph of frogs with multiple-leg malformaties. The cause could be pollution, parasites, or ultraviolet radiation. Malformations are not common in Alberta amphibians but students may be interested in seeing how amphibians are being affected in other parts of the world.

***National Geographic.*** Vol. 195, No. 4, April 1999.
This issue has a short pictorial article entitled, *Vernal Pools.* Vernal means occurring in spring. Some of the pictures include salamander eggs, wood frogs, spotted salamander, red-spotted newts, and predators of young amphibians such as dragonfly nymphs and diving beetles. Also, see the inside back cover to discover how the photographer figured out to photograph the animals without scaring them off and stirring up the muck.

## Newsletter

***Croaks and Trills.*** The official newsletter for volunteers and others interested in the Alberta Amphibian Monitoring Program. Contact Lisa Takats at (780) 427-1249 (call toll free 310-000 and ask for 422-9536) or write: Alberta Amphibian Monitoring Program, 7th floor O. S. Longman Building, 6909 – 116 Street, Edmonton, Alberta T6H 4P2. Free.

This newsletter welcomes submissions of 250 to 300 words. Short articles can be about experiences, poems, musings, related to amphibians or reptiles. Pictures are welcome and will be returned if requested. Please include your name, address and phone number.

## Slides

A slide show of the amphibians and reptiles of Alberta is available to be borrowed through the Alberta Amphibian Monitoring Program. Contact: Lisa Takats at (780) 427-1249 (call toll free 310-000 and ask for 422-9536). Free.

## Videos

**Try Your School Library** - There may be educational resources about amphibians already there! Some of the resources may be about threatened species. Look for the following videos:

- ***Nature's Legacy***. A series of four videos produced by Amoco Canada Petroleum Company Ltd. The titles in the series are: *A Southwest Safari; Prairie Wildlife: A Complex Web; Alberta's Grassland and Parkland;* and *Wildlife at Risk*.

## Organizations

***Ducks Unlimited***
202, 10470 - 176 Street
Edmonton, Alberta T5S 1L3

Tel: (780) 489-2002
Fax: (780) 489-1856
Website: www.ducks.ca

***Canadian Nature Federation***
1 Nicholas Street
Suite 606
Ottawa, Ontario K1N 7B7

Toll Free: 1-800-267-4088
Tel: 613-562-3447, ext. 299
Fax: 613-562-3371
E-mail: epiccnf@web.net

***Canadian Wildlife Federation***
2740 Queensview Drive
Ottawa, Ontario K2B 1A2

Tel: 1-800-563-9453
Fax: 613-721-2902
E-mail: info@cwf-fcf.org

***Trout Unlimited Canada***
Box 6270, Station D
Calgary, Alberta
T2P 2C8

Tel: 403-221-8360
Toll Free: 1-800-909-6040
(outside Calgary)
Fax: 403-221-8368

***World Wildlife Fund***
90 Eglinton Avenue East, Suite 504
Toronto, Ontario M4P 2Z7

Tel: 1-800-26-PANDA
Fax: 416-489-3611

## On the Internet - "Web"ed Sites Worth Wading Through

### Good Ones for Teachers

Alberta Amphibian Monitoring Program
http://www.gov.ab.ca/~env/nrs/wildlife/amphib/index.html

Alberta Environment
http://www.gov.ab.ca/env/

Atmosphere Science - Acid Deposition
http://atlenv.bed.ns.doe.ca/aeb/ssd/acid/index.html

Canadian Amphibian and Reptile Conservation Network
http://www.cciw.ca/ecowatch/dapcan/

The David Suzuki Foundation's New Report Series on Climate Change
http://www.v.kool.com/suzuki

Declining Amphibian Populations in Canada (DAPCAN)
http://www.cuug.ab.ca:8001/~animal/DAPCAN.html

Environment Canada's Global Climate Change
http://www.ec.gc.ca/climate/index.html

North American Amphibian Monitoring Program (NAAMP)
http://www.mp1-pwrc.usgs.gov/amphibs.html

North American Reporting Centre for Amphibian Malformations (NARCAM)
http://www.npwrc.usgs.gov/narcam/

Status of Alberta Wildlife Report, December 1996
http://www.gov.ab.ca/env/fw/status/index.html

The Exploratorium – Museum of Science, Art, and Human Perception
http://www.exploratorium.edu/frogs/

## Other Sites Which May Be of Interest

Frog Log
http://acs-info.open.ac.uk/info/newsletters/FROGLOG-14.html

Herp Pictures
http://gto.ncsa.uiuc.edu/pingleto/herps/forgpix.html

Philadelphia herpetological Society
http://herpetology.com/phs.html

Society for the Study of Amphibians and Reptiles
http://falcon.cc.ukans.edu/~gpisani/SSAR.html

Whole Frog Project
http://george.lbl.gov/ITG.hm.pg.docs/Whole.Frog/Whole.Frog.html

PlantWatch – phenology program run by Devonian Botanic Garden
http://www.devonian.ualberta.ca/pwatch/

## Excellent Sites for Students to Hop to

The Case of the Disappearing Frogs
http://www.aquarium.org/education/spotlight/disappearingfrogs/corepage.htm

Froggy Page
http://frog.simplenet.com/froggy/

The Frog Page
http://www.geocities.com/TheTropics/1337/

Frogland
http://www.teleport.com/~dstroy/frogland.html

The Somewhat Amazing World of Frogs
http://www.csu.edu.au/faculty/commerce/account/frogs/frog.htm

A Thousand Friends of Frogs
http://cgee.hamline.edu/frogs/sciencecorner2.htm

## Amphibian Monitoring Program - Teacher Evaluation

Please take a few minutes to let us know if this educational package is effective. Helpful comments enable the development of useful and enjoyable classroom materials and successful outings at monitoring sites.

***Name:*** _____

***School Mailing Address:*** _____

**Information**

Was there enough background information to conduct the activities? Please comment.

What other information would you like to see in the package?

**Activities**

Were the activities appropriate to the grade level? Please comment.

Do you have any other ideas for activities?

**Curriculum Support**

Could the activities have a better fit in the curriculum? Comment further.

Where else do you see Alberta amphibians fitting into curricula?

**Suggestions/Comments/Ideas . . all are welcome.**

Feel free to comment and tell us more on any or all parts of the education package. Your feedback will make it better and more useful for other teachers to use.

***Please return with a completed datasheet*** by **Mail**: Alberta Amphibian Monitoring Program, Alberta Conservation Association, c/o Alberta Environment – Fisheries and Wildlife Management Division, 7th Floor, O. S. Longman Building, 6909 - 116 Street, Edmonton, Alberta T6H 4P2. or **Fax:** (780) 422-9685

# Alberta Amphibian Monitoring Program

## Student Pocket Manual

*Name:* _____

*School:* _____



### IDENTIFYING STAGE

Amphibians lay their eggs, which is also called spawn, and attach them to plants and rocks underwater. Match the picture of each spawn to the amphibian group.

1. Single eggs or small groups



A. Toads

2. Eggs in a cluster



D. Salamanders

3. Eggs in a string



C. Frogs

## Boreal Chorus Frog



***Special Markings:***

- 
- 

***Sounds Like:***



The most common amphibians that we are likely to *hear* on any field trip in Alberta are:

| | |
|---|---|
| Boreal Chorus Frog | page 10 |
| Boreal Toad | page 8 |
| Canadian Toad | page 9 |
| Northern Leopard Frog | page 11 |
| Spotted Frog | page 12 |
| Wood Frog | page 13 |

Based on their distribution throughout Alberta, the amphibians species we are likely to find on our field trip are:

_____

_____

_____

_____



***Key for Identifying Adult Amphibians***

If you are not sure of the species you have, use the key below. Begin at number (No.) one and choose the best option, **A** or **B** that best describes the amphibian. Continue choosing until you arrive at its identification.

1. **A** Body covered with scales.
   **You've got a reptile!**
   **B** Body does not have scales.
   Go to No. **2**.

2. **A** Hind legs same length as front legs and are not modified for hopping, long tail. Go to No. **3**
   **B** Hind legs much longer than front legs, and are muscular and modified for hopping, no tail. Go to No. **4**



**Salamanders**

3. **A** Irregular yellowish stripe (may be broken) down the back. 4th toe on hind foot noticeably longer than the other toes. **Long-toed Salamander**
   **B** Back and sides striped or spotted. 4th toe about the same length as others. **Tiger Salamander**



**Frogs & Toads**

4. **A** Dorsolateral folds (ridges on back) present. Go to No. **5**
   **B** Dorsolateral folds (ridges on back) absent. Go to No. **7**







***Word List***

Carefully circle each letter when you find the words in the puzzle. Look vertically, horizontally, diagonally, forwards and backwards.

| | |
|---|---|
| Boreal Toad | amphibians |
| Canadian Toad | calls |
| Chorus Frog | eggs |
| Leopard Frog | gills |
| Spotted Frog | larva |
| Wood Frog | |
| | bog |
| newts | ditch |
| skin | lake |
| tadpole | marsh |
| warts | pond |
| webbed | slough |
| UV | |



## Northern Leopard Frog



***Special Markings:***

- 
- 

***Sounds Like:***



**Around Amphibians, Remember:**

1. Wash your hands before you go. Do not apply lotion or insect repellent. Remember, amphibians breathe through their skin.
2. For your safety, choose a partner or small group and stay together.
3. Be quiet. Listen for calls for at least three minutes.
4. Never follow a frog into the water. Frogs will head for the deepest place.
5. Be gentle with the creatures. Put them back where you found them.
6. Don't kiss frogs, there are no Princes or Princesses out there!
7. Wash you hands when you are finished handling amphibians.

**AMPHIBIAN WORD SEARCH**

E K A L M A R S H S P D
R D O E W A R T S P A S
G T A L G V E W G O B N
O S L O U G H E T T D A
R C G P T T S N S T I I
F W I D E L A T K E T B
S L L A C I A L I D C I
U A L T D A N E N F H H
R R S A D N O P R R D P
O V N G O R F D O O W M
H A S D E B B E W G B A
C G O R F D R A P O E L

***Secret Message:***

Write out the secret message with the leftover letters.

__ __ __ __ __ __ __

__ __ __ __ __ __ __